



Lanterns
and
Reflectors



**Wardle
System**



Trade Discount $33\frac{1}{3}\%$

No Advance.



REG.
TRADE MARK.

Catalogue No. 15

of



LANTERNS



**REFLECTORS
and FITTINGS**

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Wardle Engineering Co. Ltd.

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Wardle Fittings.

IMPORTANT.

The Directors of the Wardle Engineering Co. Ltd. desire to make known that the Company, Shareholders, Employees, and Manufactures are and always have been British throughout.

The presence of this Registered Trade Mark—



on any Lantern, Reflector, or Fitting is a guarantee to this effect.

The present Catalogue No. 15 is fully descriptive of our latest designs and manufactures. The majority of the Lanterns and Reflectors have been re-designed in view of the experience gained in industrial lighting, and we can with confidence recommend Wardle products for all classes of lighting service.

“Wardle” street lighting designs are known throughout the world. We manufacture Brackets, Pole Clamps, Fuse Boxes, Spigot Caps, etc., complete to specification or of standard design.

The services of our Engineering Department are at the disposal of all interested in good lighting. Our engineers will visit any part of the country for the purpose of preparing detailed lighting schemes, and estimates will be submitted and advice offered entirely free and without obligation.

WARDLE SERVICE IS UNIQUE, and engineers are cordially invited to avail themselves of our offer.

CONDITIONS OF SALE.

Unless otherwise stated or agreed upon, the following are the conditions of sale:—

LAMP HOLDERS are **included** in the price of the lantern or fitting unless otherwise stated.

LAMPS are **not** included.

DELIVERY.—Carriage will be paid only on orders of £10 value or over within the United Kingdom. Cases and packing are charged, but credited if returned carriage paid and in good condition within 14 days from the date of the invoice.

DAMAGE IN TRANSIT.

All goods are carefully packed before despatch, and **no responsibility** for damage in transit can be accepted **unless** the consignee signs for the goods as “unexamined,” and notifies the carriers and ourselves within **THREE DAYS** of the delivery of the goods.

In the case of goods for export, the Company's liability ceases with delivery on board ship.

PAYMENT.—A discount of 2½% is allowed for payment during the month following delivery, or in case of export orders on despatch from our works.

PRICES.—In compiling the present Price List, due allowance has been made for future wage reductions; but due to the uncertainty of the cost of raw material all prices are necessarily subject to alteration without notice.

October, 1922.

Wardle Fittings.

Good Lighting—Its Importance and How to obtain it.

THE recent abnormal trade depression may have served a useful purpose in forcing a realization of the highly inflated stocks held by many manufacturers. During the post-war boom period price was apparently of no particular moment. As a direct result heavy stocks were carried, and when the country was faced with a financial crisis the liquidation of the stocks at any prices obtainable became of paramount importance.

The immediate result was to cause a feeling of instability throughout the buying world. Purchasers realized that prices depended upon the manufacturers' financial needs, and not upon the actual value of the materials involved.

Business was deferred until the very lowest quotation was obtained. Frequently manufacturers quoted below cost to avoid closing their works entirely. In a word, a state of complete chaos arose, and it was impossible to quote firm prices with any degree of certainty of securing the order. The realization of vast Government stores at fantastically low prices further served to hamper legitimate trade.

Happily this unfortunate state of affairs appears to be almost at an end.

Raw materials are now obtainable at prices which compare favourably with those ruling before the war.

Wages have been substantially reduced, and it is possible to estimate for the further agreed reductions to take place at some future date. This is all to the good. Buyers may now rest content that in placing orders for manufactured goods they will be buying at rock bottom prices.

A feeling of stability should replace the feeling of uncertainty before ruling. Much needed improvements may be put in hand, and the interchange of trade should soon result in the re-establishment of the industries of the country. The economic struggle will naturally be acute, and should serve to focus the attention of all Works Officials on any measures which are likely to increase production, and at the same time to promote the comfort and convenience of the millions of workpeople engaged in the industries of the country.

The aims of the factory management are two-fold—an increased production at a decreased cost, and concerned in the realization of these aims are the three items of Labour, Machinery and Lighting.

The importance of these items is emphasized when it is realized that either two may be rendered useless by the absence of the third.

Poor tools have a direct adverse bearing on the quantity and quality of the work turned out; and just as a factory keeps abreast of the times by the installation of the most up-to-date labour-saving machinery, so it is economy in the strictest sense to instal only the most adequate lighting arrangements that it is possible to obtain.

LIGHT

Light is the most important tool placed at the disposal of the workman, for without light all other tools are useless.

The good lighting of a factory is one of its most valuable assets, and the Home Office Departmental Committee on Lighting is emphatic in stating that there should be a statutory provision requiring adequate and suitable lighting in every part of a factory or workshop.

Wardle Fittings.

GOOD LIGHTING

Reduces the number of accidents.
Improves the working and hygienic conditions.
Protects the eyes of the workpeople.
Increases output.
Improves the quality of production.
Decreases the percentage of spoilage.
Reduces the cost of the lighting itself.

In a word—Good Lighting Pays.

The principles of good lighting and the benefits to be derived therefrom are now generally recognized, but to obtain satisfaction and to secure the desired results, only those Reflectors which are capable of accomplishing a specific and predetermined form of light-distribution should be employed.

The word "Wardle" in connection with Reflectors is a guarantee of careful and correct design, and in compiling the present Catalogue every endeavour has been made to present a selection of designs as representative and comprehensive as possible, in order to meet the most exacting requirements of all industrial lighting installations.

The illustrations are careful reproductions from actual models, while the polar curves and technical data are all the results of actual tests.

Modern commerce is built on confidence—confidence on the part of the buyer that the manufacturer will provide the correct article as regards quality, price, and length of service.

It is that confidence on the part of the reader that we desire to gain, or, if possessing it already, to retain. To this end we emphasize the fact that none of our products are the result of rule-of-thumb-calculation or of the hit-or-miss design so frequently encountered.

Superiority of design, of material, and of finish are distinctive features of all "Wardle" Reflectors—eminently desirable features, since the lighting of all interiors is now an exact science.

Every lighting installation, whether for factory, works, or office, requires special and individual treatment if good lighting, with its attendant advantages, is to be obtained.

"Wardle" Reflectors, in conjunction with the latest and most efficient lighting unit—the Gasfilled Lamp—are ideal for all industrial purposes, and to secure their most effective and economical use every electric lighting installation should be planned with the assistance of our Illuminating Engineering Department, or of our Distributors, who are in constant touch with us in matters of scientific illumination.

Advice on lighting matters is offered free, and we invite you to avail yourselves of our co-operation.

200,000 accidents are estimated to occur annually in British workshops, the major portion taking place during hours of bad artificial lighting. The remedy is to have good lighting.

Wardle Fittings.

WARDLE REFLECTORS

For All Classes of Industrial Service.

TECHNICAL DATA.

Before proceeding to describe a simple method of designing interior lighting installations, we afford below certain useful information and definitions of lighting terms in common use.

CANDLE-POWER.

Candle-power is the unit of luminous intensity. The term was originally derived from the luminous intensity of the candle flame, but the present unit in use in Great Britain is the International Candle-Power, which is one-tenth of the candle-power of the Vernon-Harcourt 10 candle-power Pentane Lamp. One International candle is equal to 1.11 Hefner units, in terms of which German and the majority of Continental lamps are rated.

MEAN HORIZONTAL CANDLE-POWER (M.H.C.P.).

Candle-power being measured as an intensity in any direction, it has become customary for manufacturers to rate lamps in terms of the M.H.C.P., or the average horizontal candle-power when the lamp is held in a vertical position and rotated at a speed of 180 revolutions per minute.

A horizontal measurement of candle-power disregards all light but that emitted in a horizontal direction, and as lamps emitting widely different total amounts of light may emit the same amount of light in a horizontal direction, it follows that a M.H.C.P. measurement affords incomplete data—more especially when lamps with varying types of filaments are compared.

Further, the light distribution from all lamps varies with the angle of elevation, and may be modified to practically any extent by the use of Reflectors. **A candle-power rating has therefore no value unless the equipment used and the candle-power in question are accurately described.**

MEAN SPHERICAL CANDLE-POWER (M.S.C.P.)

A complete measurement of candle-power requires that consideration should be given to the whole of the light emitted by the lamp. If a sphere be supposed to surround the lamp, and the candle-power is measured in the direction of a large number of points uniformly distributed over the surface of the sphere, the **average** of all the measurements is the M.S.C.P. of the source.

The mean spherical candle-power may be considered as a measure of the total flux of light.

Thus $12.6 \times \text{M.S.C.P.} = \text{total flux emitted in lumens.}$

LUMEN.

The lumen is the unit of luminous flux, and is that quantity or flux of light which produces an average illumination of one foot-candle over one square foot.

Conceive a source of light whose intensity is the same in all directions and equal to unity, and further imagine the source to be surrounded by a sphere of radius one foot. The light falling upon each square foot of the surface of the sphere is one lumen, and the total quantity of light emitted by the source $= 12.6 (4\pi)$ lumens, since the area of the surface of the sphere is $12.6 (4\pi)$ square feet.

Thus from any source the total flux emitted $= \text{M.S.C.P.} \times 12.6 \text{ lumens.}$

Wardle Fittings.

LUMEN—*Continued.*

The lumen as a source of light output is irrespective of direction, and the efficiency of all light sources may be accurately expressed in terms of lumens per watt.

Efficiency may also be expressed in terms of watts per candle, but it should be remembered that this basis of comparison is correct only for lamps of similar design and with the same shape of filament. For example: Two lamps of equal wattage may have the same M.H.C.P., but one lamp (say of the gasfilled type) may emit a much greater quantity of light, yet the efficiency in terms of watts per M.H.C.P. would be identical. Lumens per watt would at once indicate the superiority of the more efficient lamp.

FOOT-CANDLE.

The foot-candle is the unit of illumination, and is defined as the illumination of a surface everywhere one foot distance from a source of one candle-power.

Now the lumen has been referred to above as that quantity or flux of light which produces an average illumination of one foot-candle over one square foot.

Both definitions amount to the same thing, and we have only to consider our unit sphere again to make this fact clear. When unit source, i.e., a light unit whose candle-power is the same in every direction, and equal to unity, is placed at the centre of the sphere, every point on the sphere is one foot away from the source of light, and at right angles to the light rays. Hence by the first definition the illumination is everywhere one foot-candle. Again, since the total flux emitted equals 12.6 lumens, and the total area of the sphere 12.6 square feet, each square foot of area clearly receives a flux of one lumen. Hence by the second definition the illumination is everywhere one foot-candle.

The illumination produced by a source of light varies inversely as the square of the distance from the source. If the radius of the sphere referred to above is increased to two feet, the area of the surface of the sphere will be increased four times, since the area of the surface of a sphere varies as the square of the radius. Hence at twice the distance four times the area will be illuminated.

The light flux remains the same, from which it follows that the lumens received per square foot of area will be one quarter of the value previously obtaining. At three times the distance the illumination will be one ninth of that at unit distance, and so on.

An idea of the foot-candle may be obtained by holding a newspaper one foot away from and parallel to the flame of an ordinary candle. Such an illumination is sufficient for reading purposes, but industrial service generally demands a higher value. Thus, for sewing on dark cloth, 10 foot-candles would not be excessive, while as high a value as 20 foot-candles is sometimes specified for engraving and similar work. On the other hand, for yard lighting, a fraction of a foot-candle may suffice, always bearing in mind that the illumination must never be so low as to be the contributory cause of accident.

Wardle Fittings.

TOTAL QUANTITY OF LIGHT IN LUMENS.

The total quantity of light incident on a surface may readily be determined by multiplying the area of the surface in square feet by the foot-candle intensity.

From the definition of the foot-candle above it follows that the lumens per square foot are numerically equal to the intensity in foot-candles. Hence the total quantity of light in lumens is afforded by the product of the quantities as mentioned above.

Example: The average illumination of a surface whose area equals 100 square feet is 3 foot-candles. Find the total flux incident on the surface.

$$\begin{aligned}\text{Total flux of light} &= \text{area in square feet} \times \text{foot-candle intensity.} \\ &= 100 \times 3 \\ &= 300 \text{ lumens.}\end{aligned}$$

LIGHT OUTPUT FROM LAMPS OF VARIOUS SIZES.

By the courtesy of the Ediswan Company the light output of the various standard lamps is afforded below. The efficiency is expressed in watts per candle (M.H.C.P.), and more accurately in terms of lumens per watt.

For purposes of design a knowledge of the light output of the various lamps is essential.

VACUUM TYPE LAMPS.

Volts.	Watts.	Watts per Candle.	Lumens.	Lumens per Watt.
100	40	1'15	341	8'5
to	60	1'1	535	8'9
130	80	1'1	710	8'9
	100	1'05	930	9'3
200	40	1'2	330	8'25
to	60	1'15	515	8'6
	80	1'15	690	8'6
260	100	1'1	905	9'0

GASFILLED LAMPS.

Volts.	Watts.	Lumens.	Lumens per Watt.
	60	700	11'6
	100	1,250	12'5
100	150	2,010	13'4
	200	5,795	14
to	300	4,600	15'33
	500	8,060	16'12
130	1,000	18,000	18
	1,500	27,000	18
200	100	1,125	11'25
	150	1,750	11'6
to	200	2,500	12'5
	300	4,100	13'6
	500	7,400	14'8
225	1,000	16,120	16'12
	1,500	24,200	16'12

Wardle Fittings.

DEFINITIONS.

The following definitions of terms in common use are of importance:—

THE WORKING PLANE

is the surface on which the chief illumination is required, and, unless otherwise stated, is generally assumed to be about 3ft. above the floor.

SUSPENSION HEIGHT

is the distance from the centre of the light source to the working plane.

SPACING RATIO

is the ratio of the distance apart to the suspension height of the units, and is calculated to secure uniform illumination on the working plane.

UNIFORM ILLUMINATION.

For all practical purposes the illumination may be regarded as uniform when the maximum variation from the mean does not exceed 20 per cent.

POLAR CURVES.

If the candle-power of a lamp, or lamp and reflector, is measured at varying angles with the horizontal, and the values thus determined plotted with polar co-ordinates, the curve drawn through the points obtained is the polar curve of light distribution of the unit in question.

The distribution curves of the vacuum type lamps are almost identical in character, whereas the shape of the filament effects a considerable variation in the case of the Gasfilled lamps.

This is an exceedingly important point, and should on no account be overlooked when reflectors for the various types of lamps are being considered. The variation in the filament calls for quite distinct Reflector designs to ensure the characteristic distributions. Manufacturers and others quite frequently fail to realize the truth of this assertion.

The distribution of light from a lamp as modified by Reflectors is of primary importance, and practically any required distribution can be obtained by suitable Reflector design.

ILLUMINATION AT ANY POINT ON THE WORKING PLANE.

It must be very clearly understood that the area enclosed by a polar curve is not a measure of the light emitted by the source, and that the curve merely affords an indication of the candle-power at various angles with the horizontal.

With the polar curve at hand the illumination at any point on the working plane may be determined by the formula:—

$$I_H = \frac{CP}{H^2} \cos^3 \theta$$

where I_H is the horizontal illumination at the point.

CP the candle-power in the direction of the point.

θ the angle of incidence and

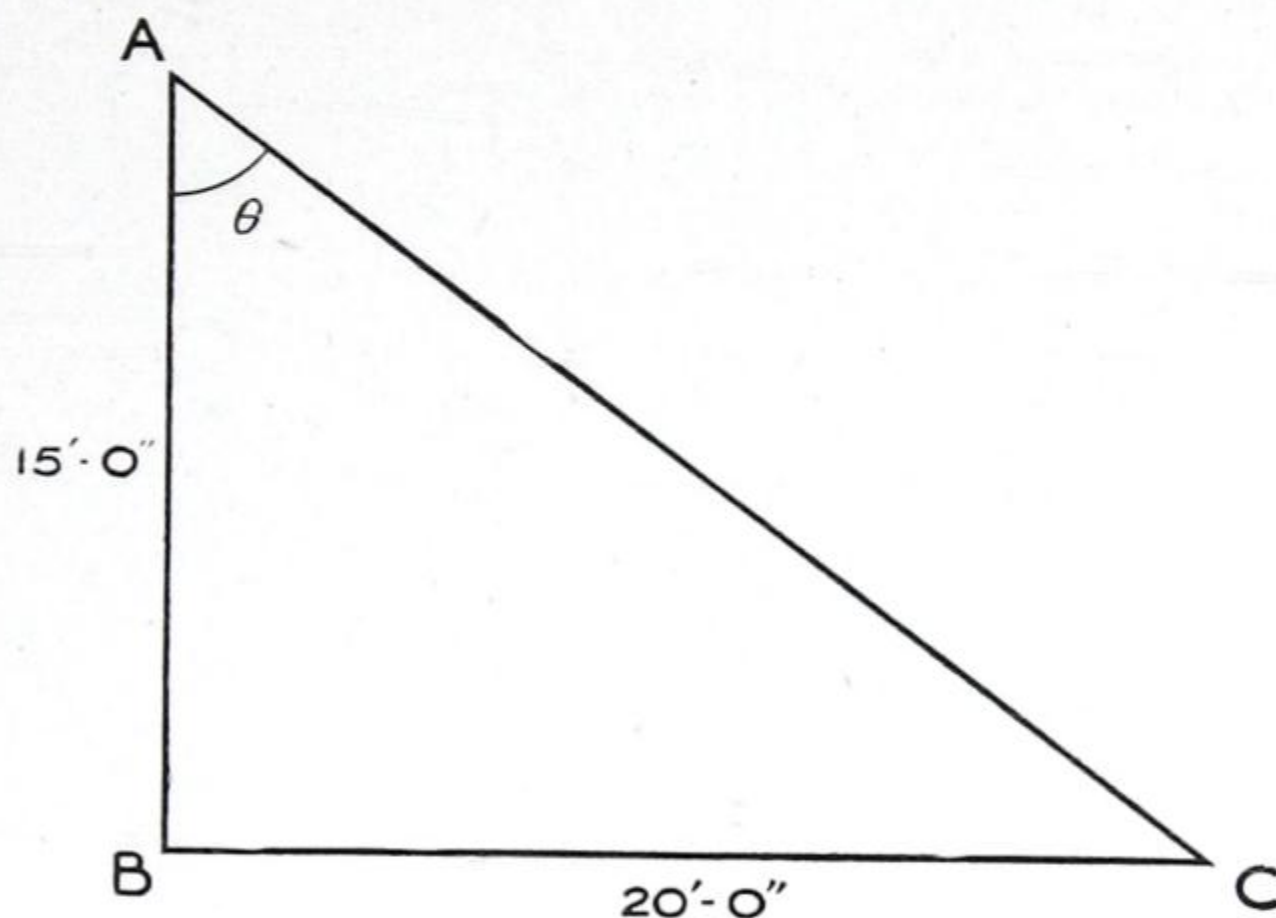
H the height of the source above the working plane in feet.

Wardle Fittings.

EXAMPLE.

Find the illumination at a point in a horizontal plane 20ft. from directly beneath a source whose height above the plane is 15ft., the candle power in the direction of the point being 500.

In the diagram the source is at A, and the illumination is required at C, 20ft. from B, a point directly beneath A. A.B. = H = equals 15ft.



From the formula:—

$$I_H = \frac{500}{15^2} \times \left(\frac{15}{25}\right)^3$$

$$= .48 \text{ foot-candles.}$$

Without reflectors only 22% of the light output of Gasfilled lamps is received on the working plane. With Wardle Reflectors the amount is increased three-fold.

Wardle Reflectors

For All Classes of Industrial Service.

A SIMPLE METHOD OF DESIGNING AN INTERIOR LIGHTING INSTALLATION.

In designing an interior lighting installation, the first point to decide is the intensity necessary for the particular class of service. The illumination should clearly never be so low as to be the direct cause of accidents, while it is unnecessary to provide illumination in excess of that required. The table affords a range that has been found to give good results in practice, and it should be pointed out that for fine work, demanding much eye effort, the higher value should be taken, while for rough work the lower degree will afford satisfaction.

TABLE No. 1.

ILLUMINATION INTENSITY FOR VARIOUS CLASSES OF SERVICE.

	Foot-candles.
BOOKBINDING	
Cutting, punching, stitching	3-5
Embossing	4-6
Folding, etc.	2-3
CARPENTER'S SHOP	2.5-5
DRAWING OFFICE	6-10
ENGRAVING	10-12

Wardle Fittings.

TABLE No. 1—*Continued.*

FACTORY	
General Lighting	1-1'5
General Lighting, without local lighting	2-4
Bench Lighting	3-7
FOUNDRY	3-5
GARAGE	1-3
MILLS	
General, Cotton	1-5
General, Silk	1-6
General, Woollen	2-25
PAINT SHOP	
Fine Work	4-8
Coarse Work	2-4
PATTERN SHOP	3-5
PRINTING	3-10
RAILWAYS	
Waiting Room	1'5-2'5
Baggage	1-1'5
Platforms	'25-1
SEWING	2-15
STEEL ROLLING MILLS	1-2
WAREHOUSE	'5-1'5

CHOICE OF REFLECTORS.

Having fixed the necessary intensity, the type of installation must then be decided. For factory lighting in general, direct lighting with "Workslite" Reflectors is usually the best.

For office lighting, clothing factories, drawing offices, tool rooms, sorting rooms, painting and varnishing, pattern making, and similar classes of work, a semi-indirect system with "Inverlite" Fittings is to be preferred, since the elimination of both shadows and glare has a direct bearing on the output. No general rules can, however, be laid down, and if one's practical experience is limited, the advice of a competent authority on lighting matters should be sought as to the best installation to adopt.

A vitreous enamelled "Workslite" Reflector will ensure permanent satisfaction if the direct system has been decided upon. First cost is no criterion of a Reflector's value, and although paint enamel may be cheaper initially, it is much dearer in the end, since depreciation is rapid and light absorption high. All "Wardle" reflecting surfaces are coated with three coats of the finest vitreous enamel obtainable.

USEFUL LIGHT.

The whole of the light emitted by a lamp cannot possibly reach the working plane. Some portion of it is absorbed by the Reflector, a further portion by the walls and ceiling, while cross reflection between the walls results in a further loss. As a general rule, it can be assumed that, with "Workslite" Reflectors, some 60% of the light generated is received on the working plane, this high percentage being due to the special design and the high quality of the reflecting surface. Without Reflectors only about 22% of the light emitted by Gasfilled lamps is usefully employed on the working plane, the remaining portion being absorbed by the walls and ceiling of the room.

Wardle Fittings.

TOTAL LUMENS REQUIRED.

Having fixed the intensity, the useful lumens required may be calculated by multiplying the value chosen by the area in square feet of the space to be lighted. The total lumens will clearly equal the useful lumens divided by the efficiency co-efficient—the .6 mentioned above.

For example, see below.

SIZE, SPACING AND SUSPENSION HEIGHT.

It now only remains to fix the number of points, when the actual size of the lamp may at once be determined. In GENERAL LIGHTING, the whole area is illuminated without reference to the position of the work. This arrangement is by far the most elastic, since it permits of any re-arrangement of the work without a corresponding re-arrangement of the lighting units. In GENERAL LIGHTING, the units should be spaced as nearly as possible in uniform rows, and at the same distance apart—each unit, in fact, occupying a square, the unit being placed at the centre.

Practical considerations call for four types of Reflectors providing—
FOCUSSING,
INTENSIVE,
EXTENSIVE,
or
DISPERSIVE Distribution.

FOCUSSING REFLECTORS

secure an even illumination when the spacing ratio is unity.

INTENSIVE REFLECTORS

secure an even illumination when the distance apart equals $1\frac{1}{2}$ times the suspension height.

EXTENSIVE REFLECTORS

are so designed that when suspended a distance apart equal to twice their height above the working plane an even illumination results.

DISPERSIVE REFLECTORS

provide a wide distribution, and may be used as far apart as $2\frac{1}{2}$ times the suspension height.

The varying designs are necessary to secure even illumination under varying conditions of ceiling height, area of space to be illuminated, etc., and lamps may be suspended at practically any height within reason, and yet secure identical results, provided that correctly designed Reflectors be employed.

Always use the largest lamp possible to secure the desired result, since this makes for economy in initial expenditure and upkeep.

APPLICATION OF METHOD.

As an example of the application of the above method of design, consider an engineering shop 80 feet long by 60 feet wide by 25 feet high.

A general illumination of 3 foot-candles intensity will be sufficient for ordinary work.

Hence,

$$\begin{aligned}\text{Useful lumens} &= 80 \times 60 \times 3 \\ &= 14400 \\ \text{Total lumens} &= \frac{14400}{.6} \\ &= 24000\end{aligned}$$

Wardle Fittings.

APPLICATION OF METHOD—*Continued.*

The area suggests division into 12 equal squares with a light unit suspended at the centre of each.

Hence,

$$\begin{aligned}\text{Number of lamps} &= 12 \\ \text{Lumens per lamp} &= \frac{24000}{12} \\ &= 2000\end{aligned}$$

200 watt gasfilled lamps would provide the necessary illumination and also ensure sufficient margin to allow for depreciation in candle-power of the lamp, dust collection, etc.

The suspension height and the type of Reflector must now be determined. If cranes are in use, the units must be suspended above the cranes, or at a height of 20 feet or so above the working plane.

Focussing Reflectors provide an even illumination if suspended at a height equal to their distance apart, from which it follows that 12 focussing Reflectors, spaced 20 feet apart in rows themselves 20 feet apart, and suspended at a height of 20 feet above the working plane, will secure the desired results. "Wardle" Focussing Reflectors, No. 532, page 14, will afford complete satisfaction.

Otherwise, if cranes are not in use, Intensive Reflectors may be used to secure identical results. The suspension height would, however, need to be decreased to $\frac{2}{3}$ of 20' = 13' 4" above the working plane, or approximately 16' above the ground. "Wardle" Intensive Reflectors, No. 533, page 16, are to be recommended.

If a low ceiling or roof exists, Dispersive Reflectors 10' above the working plane or 13' above the ground will give similar results. "Wardle" Dispersive Reflectors, No. 528, page 20, will be required.

For switchboard erecting, building of aeroplane bodies, engine assembly or other work where a good vertical as well as horizontal illumination is required, Dispersive Pattern Reflectors may be used with advantage.

CONCLUSION.

In conclusion it is well to remember that the provision of adequate and suitable lighting in all parts of a factory or works costs but little more, and frequently much less than the antiquated systems so largely in use.

A stoppage of a few minutes on an important machine frequently means more than the cost of lighting the machine for the day, and in view of the vital importance of maximum output, an immediate overhauling of all but the most efficient lighting installations is a necessity.

Any further information on the subject will gladly be afforded, free of obligation, on application.

So long as inadequate and inefficient lighting systems are permitted to remain in works and factories, so long will there be accidents, unsatisfactory work, a low percentage of health and a high percentage of waste.

SPECIFY "WARDLE" & ENSURE SUCCESS.

Wardle Fittings.

“WORKSLITE” SECTION.

“Workslite” Reflectors are the outcome of many years experience in factory lighting and have always been identified with the latest practice in the lighting industry.

Our designers work with a definite object in view, the correct distribution for the particular type of reflector under consideration. The desired result, an ideal distribution curve, is the starting point, and from it the finished product is evolved step by step.

Thoughtful and original design is rare, but is to be found in all Wardle designs and in “Workslite” Reflectors in particular. Every engineering requirement is complied with. Thus the mild steel supporting rods are rust-proofed. The lampholder slides on a special casting permitting the easiest of focussing adjustments. Ample ventilation is provided and a patented anti-vibrator reduces lamp breakage to a minimum.

Design, appearance, efficiency, simplicity and mechanical strength are all considered and the most rigid tests must be complied with before the finished product is presented for public consideration.

We claim to have led the field for fifteen years, and the large number of “Wardle Type” Reflectors illustrated in competitive catalogues is a proof of the popularity of our designs.

Every requirement of industrial lighting has been anticipated, and the complete range of “Workslite” Reflectors affords a solution to the problem of the most economical use of the gasfilled lamp under every possible condition of Industrial Service.

“Workslite” Reflectors enable the whole of the recommendations of the Home Office Committee with regard to the adequate and scientific lighting of factories to be effectively and economically carried out.

Absence of glare, freedom from eye-strain, maximum efficiency, minimum depreciation due to dust collection, ease of cleaning, an increased and improved output, a decrease in spoilage, fewer accidents, and an inspiring, wide-awake atmosphere, with happier and more contented workers, are some of the advantages to be secured when “Workslite” Reflectors are correctly installed.

“Wardle” Patent Anti-Vibrators can be supplied with every “Workslite” design.

“Wardle” distributors are in constant touch with the manufacturers in matters of scientific illumination. Advice is offered free, and services are at the disposal of all persons interested in the preparation of lighting schemes.

Wardle Fittings.

FOCUSSING PATTERN FOR GASFILLED LAMPS.

SPECIFICATION.—Special steel spinning coated with best quality vitreous enamel, white inside, green outside. The method of support is by mild steel rust-proofed rods tapped into the cast-iron top and securely locked in position.

Easy focussing adjustment is provided.

The design secures the most concentrating effect possible with a white vitreous enamel reflecting surface.

Three coats of the finest vitreous enamel secure the maximum efficiency and lasting properties.

The open types shown are for inside lighting.

The weatherproof patterns, Nos. 532 and 530, are supplied with aterne plate sleeve and a weatherproof suspender.

The weatherproof pattern No. 534 is supplied with a cast cowl and a weatherproof suspender.

Ample ventilation is provided throughout the range.

All reflectors are complete with lampholder and suspension, and can be supplied with "Wardle" Patent Anti-Vibrators if required.

Special attention is drawn to the fact that all "Workslite" reflectors are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface, free from all chipping tendency secured.

APPLICATION.—Focussing pattern "Workslite" Reflectors are for use in lofty buildings and over travelling cranes, shafting, etc. The shape of the reflector is such that the greater portion of the light rays emitted by the lamp is re-directed into a narrow zone, a powerful cone of light being thereby produced in a downward direction.

SPACING RATIO : 1 : 1.—For even illumination, suspend Focussing Reflectors at a distance apart equal to their height above the working plane.

No.	Code Word	Diameter	Gasfilled Lamp Recommended	Lamp-holder included	PRICE			
					Open Type		Weather-proof	
		in.			s.	d.	s.	d.
534	WOTIL	12	100 W.	B.C.	8	0	12	6
532	WOSTE	16	150-300 W.	{ E S. Gol.	20	0	24	9
530	WOLSE	20	500-1500 W.		21	6	26	3
				Gol.	28	6	33	3

Wardle Fittings.

FOCUSSING PATTERN

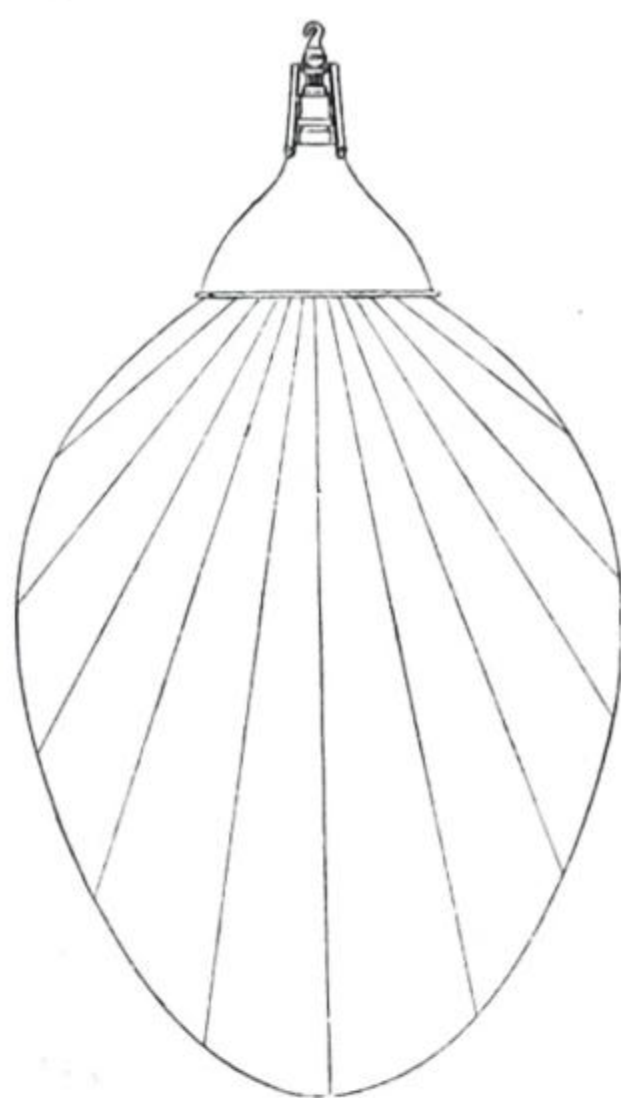
FOR GASFILLED LAMPS.



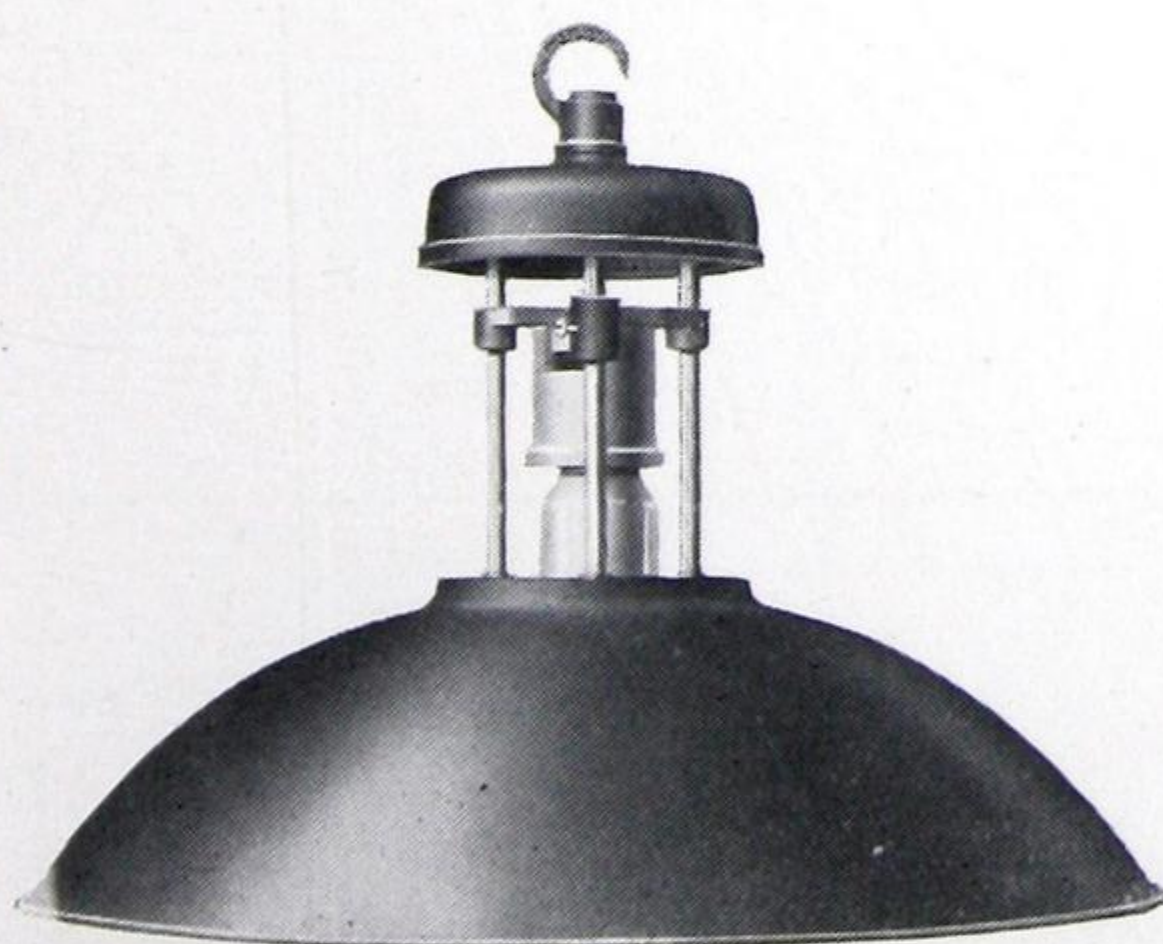
No. 534. Open Pattern.



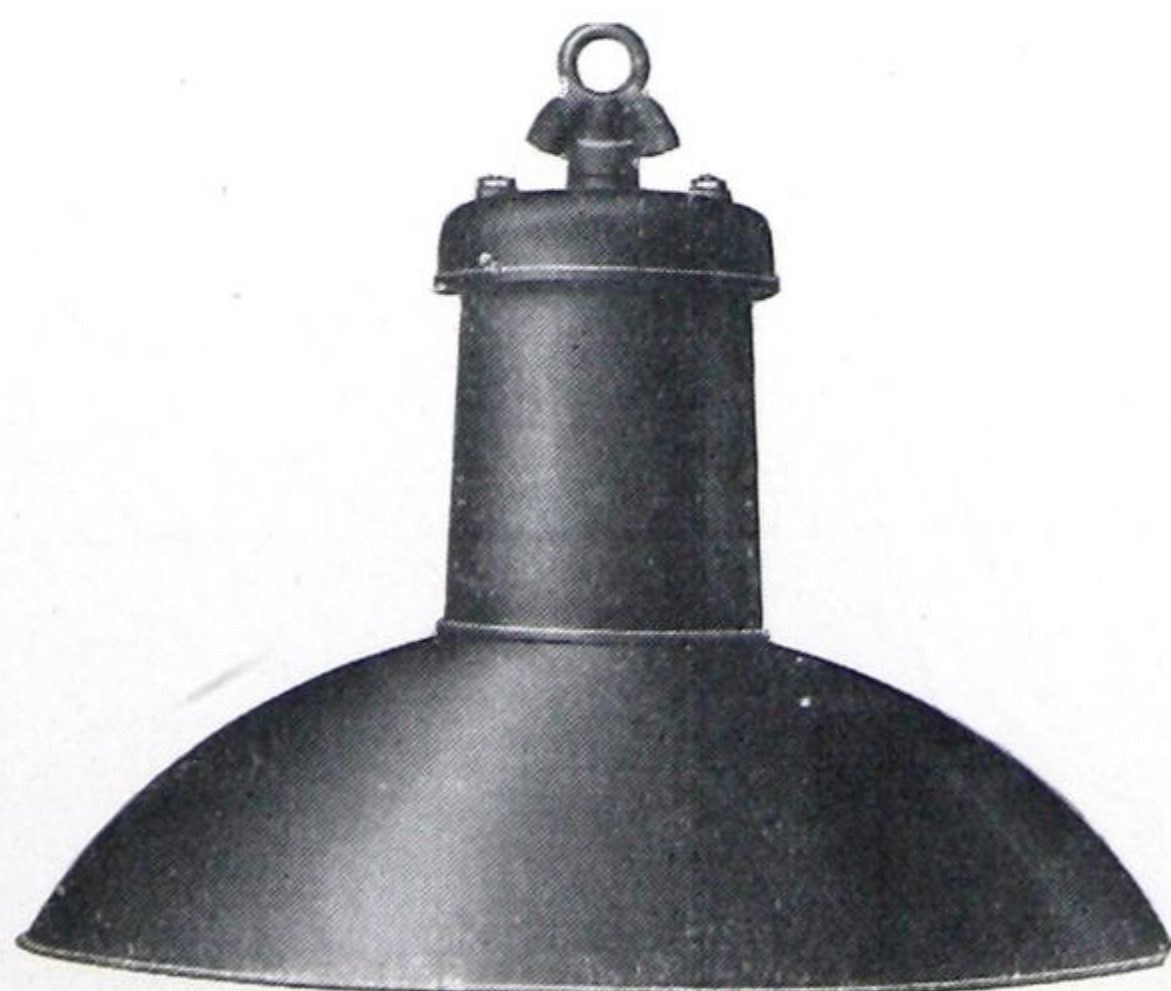
No. 534. Weatherproof Pattern.



Characteristic Polar Curve.
Result of Actual Test.



Nos. 532 & 530. Open Pattern.
Registered Design.



Nos. 532 & 530. Weatherproof Pattern.
Registered Design.

Wardle Fittings.

INTENSIVE PATTERN FOR GASFILLED LAMPS.

SPECIFICATION.—Special steel spinning coated with best quality vitreous enamel, white inside, green outside.

The method of support is by mild steel rust-proofed rods tapped into the cast-iron top, and securely locked in position.

The open types shown are for inside lighting.

The weatherproof pattern No. 531 is supplied with a terne plate sleeve and a weatherproof suspender.

The weatherproof patterns Nos. 533B, 533A and 533 are supplied with a cast-iron cowl and weatherproof suspender.

Ample ventilation is provided throughout the range.

Easy focussing adjustment is provided.

Three coats of the finest vitreous enamel secure the maximum efficiency and lasting properties.

All reflectors are complete with lampholder and suspension, and can be supplied with "Wardle" Patent Anti-Vibrators if required.

Special attention is drawn to the fact that all "Workslite" reflectors are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface, free from all chipping tendency, secured.

APPLICATION.—Intensive pattern "Workslite" Reflectors have been designed to fulfil average conditions and furnish one of the most useful and efficient ranges of reflectors made.

The deep bowl collects the major portion of the light rays, but the cone of light emitted is wider than with the focussing type. The light is spread over a greater area, and the suspension height may be reduced accordingly.

Nos. 533A and 533B are specially suitable for bench lighting, the lighting of machine shops where small work is carried on, and for ring spinning and similar rooms.

The larger sizes are for use above shafting, etc.

SPACING RATIO : $1\frac{1}{2}$: 1.—For even illumination suspend Intensive Reflectors at a distance apart equal to one and a half times their height above the working plane.

No.	Code Word.	Diameter	Gasfilled Lamp Recommended	Lamp-holder included	PRICE			
					Open Type		Weather-proof	
533B	WIKOT	in. 8	40-60 W.	B.C.	s. 6	d. 9	s. 11	d. 3
533A	WIKOS	9	100 W.	B.C.	7	9	12	3
533	WIKIT	$10\frac{1}{2}$	150-200 W.	E.S.	17	0	20	9
531	WIKER	15	300-1000 W.	Gol.	27	3	32	0

Wardle Fittings.

INTENSIVE PATTERN

FOR GASFILLED LAMPS.



Nos. 533B & 533A. Open Pattern.



Nos. 533B & 533A. Weatherproof Pattern.



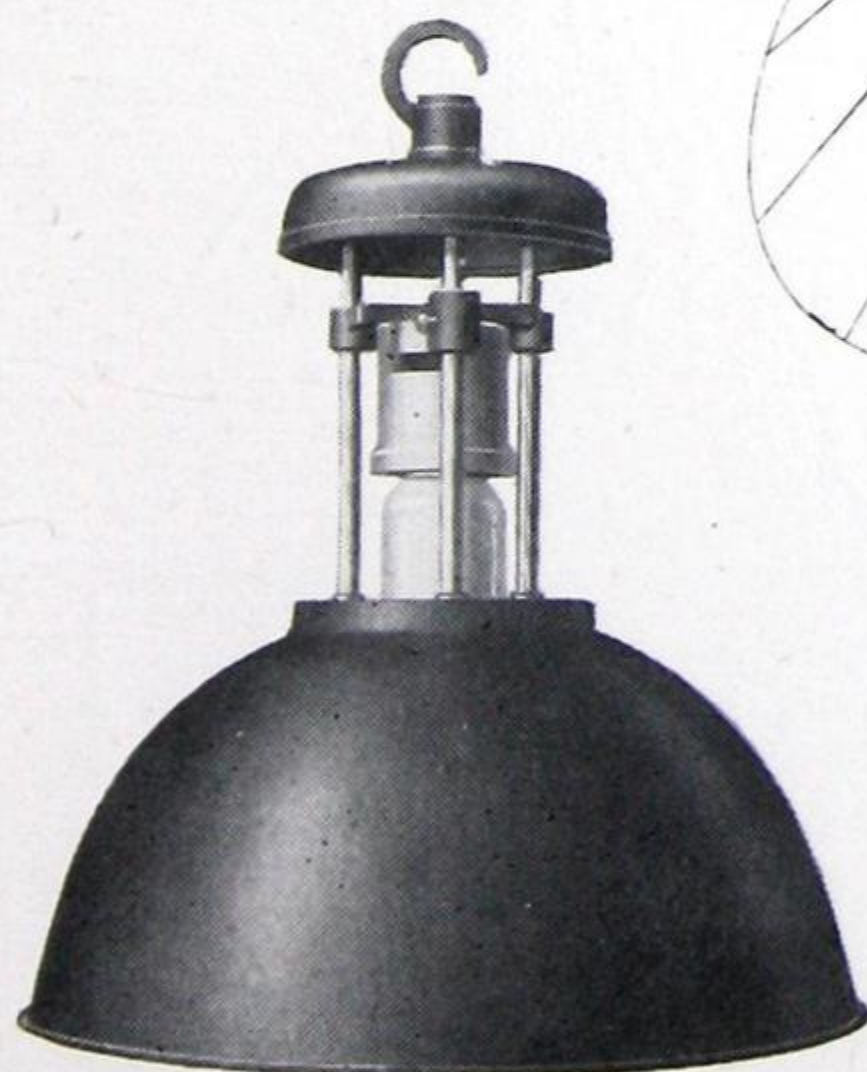
No. 533, Open Pattern.



No. 533. Weatherproof Pattern.



Characteristic Polar Curve.
Result of Actual Test.



No. 531. Open Pattern.
Registered Design.



No. 531. Weatherproof Pattern.
Registered Design.

Wardle Fittings.

EXTENSIVE PATTERN FOR VACUUM AND GASFILLED LAMPS.

SPECIFICATION.—Special steel spinning coated with best quality vitreous enamel, white inside, green outside.

Extensive open type “Workslite” Reflectors are made for attachment to the lampholder by the shade ring.

Hook suspension can be provided if desired at a slight extra cost.

The weatherproof pattern is supplied with a cast iron cowl and weatherproof suspender or coupling as required.

All reflectors are complete with lampholder and suspension.

Special attention is drawn to the fact that all “Workslite” Reflectors are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface, free from all chipping tendency, secured.

APPLICATION.—Extensive pattern “Workslite” Reflectors are intended for situations where the suspension height is limited and where it is necessary to suspend the units at moderate distances apart.

The reflectors are bowl-shaped and completely screen the lamp from view, thus conforming to the glare requirements of the Home Office Departmental Lighting Committee.

For group lighting, for use over benches and in light machine shops, Extensive Reflectors are strongly recommended. Ideal for corridors and narrow strips where a single row of units only is permissible.

SPACING RATIO : 2 : 1.—For even illumination suspend Extensive Reflectors at a distance apart equal to twice their height above the working plane.

No.	Code Word	Diameter	Lamp recommended	Lamp-holder included	PRICE			
					Open Type		Weather-proof	
535	WELKS	in. 8	40-60 W.	B.C.	s. 6	d. 9	s. 11	d. 3
535A	WELKI	9	100 W.	B.C.	7	9	12	3

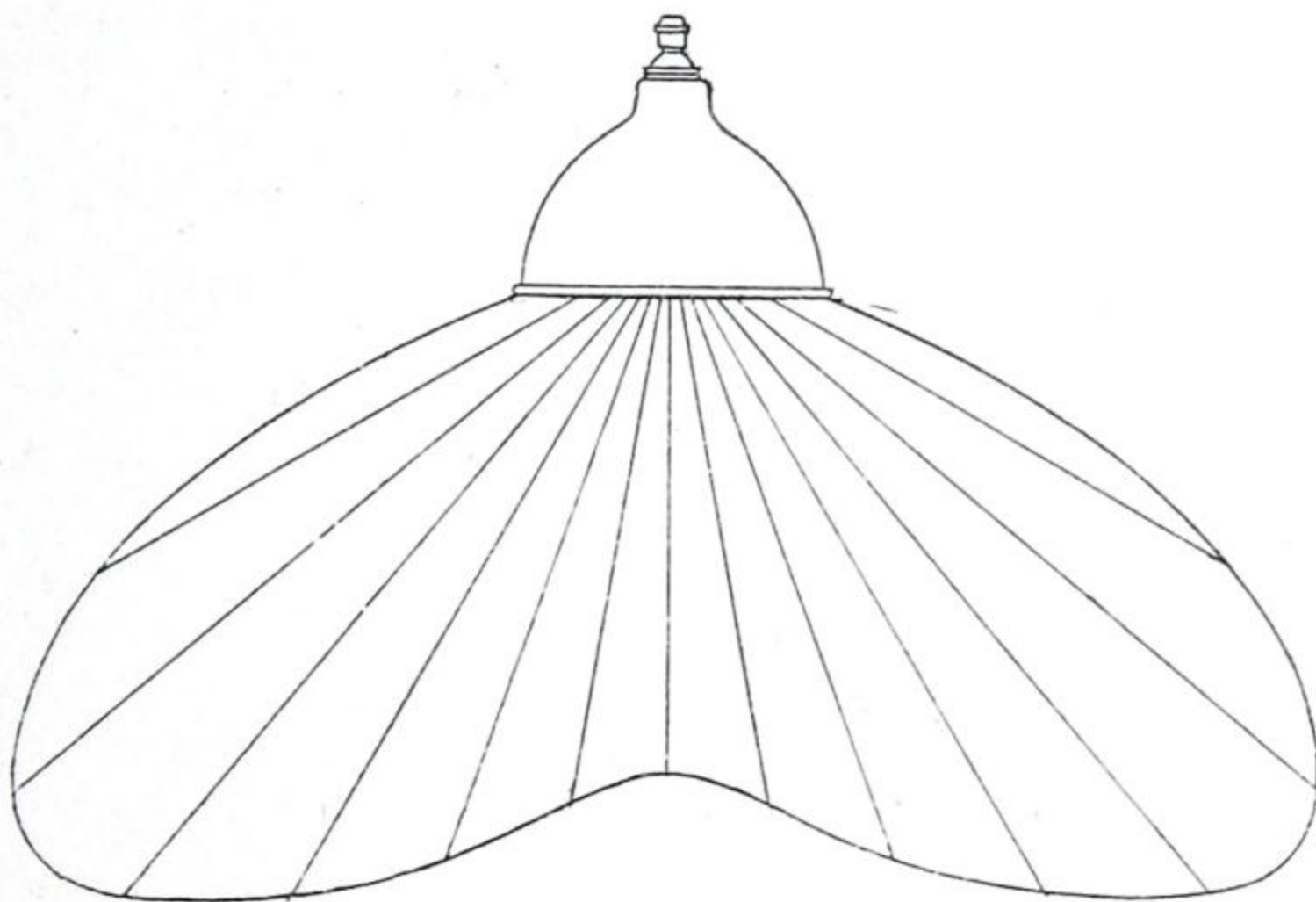
Wardle Fittings.

EXTENSIVE PATTERN

FOR VACUUM AND GASFILLED LAMPS.



No. 535. Open Pattern.



Characteristic Polar Curve.
Result of Actual Test.



No. 535A.
Open Pattern.



Nos. 535 & 535A.
Weatherproof Pattern.

Wardle Fittings.

DISPERSIVE PATTERN FOR GASFILLED LAMPS.

SPECIFICATION.—Special steel spinning coated with best quality vitreous enamel, white inside, green outside.

The method of support of the Nos. 528 and 527 is by mild steel rust-proofed rods tapped into the cast-iron top, and securely locked in position.

Easy focussing adjustment is provided.

The open types illustrated are for inside lighting.

The weatherproof patterns are supplied with a terneplate sleeve and weatherproof suspender.

The open types, Nos. 529A and 529 are two-piece spinnings for attachment to the shade ring, or hook suspension can be provided, if required, at a slight extra charge.

The weatherproof patterns, Nos. 529A and 529 are supplied with a cast-iron cowl and weatherproof suspender or coupling.

“Wardle” Patent Anti-Vibrators can be supplied with all Dispersive Pattern Reflectors.

All reflectors are complete with lampholder and suspension.

Special attention is drawn to the fact that all “Workslite” Reflectors are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface free from all chipping tendency secured.

APPLICATION.—Dispersive pattern “Workslite” Reflectors are of the shallow dome type, and possess certain inherent advantages which afford them a wide degree of popular favour. The downward flux of light is greater than with a deep bowl reflector; the illumination of the vertical plane is considerably higher, while (owing to the emission of light near the horizontal) a wide spacing may be permitted without dark patches occurring midway between the units. The effect is to lessen the contrast between the lighting units and the background, and results in a more cheerful shop atmosphere. Care only must be taken to ensure a suspension height such that the lamps are above the line of vision.

For all industrial purposes, where ease of cleaning, resistance to heat, fumes and moisture, high initial efficiency, and lack of permanent depreciation indicate that a well-made vitreous enamelled reflector is desirable, use “Workslite” Dispersive Reflectors.

Special application where wide spacing and good vertical illumination is required, as for Assembly Rooms, Stores, Bins, Foundries, Railway Yards and Platforms, Tram Sheds, Cotton and Woollen Mills, Street Lighting, etc.

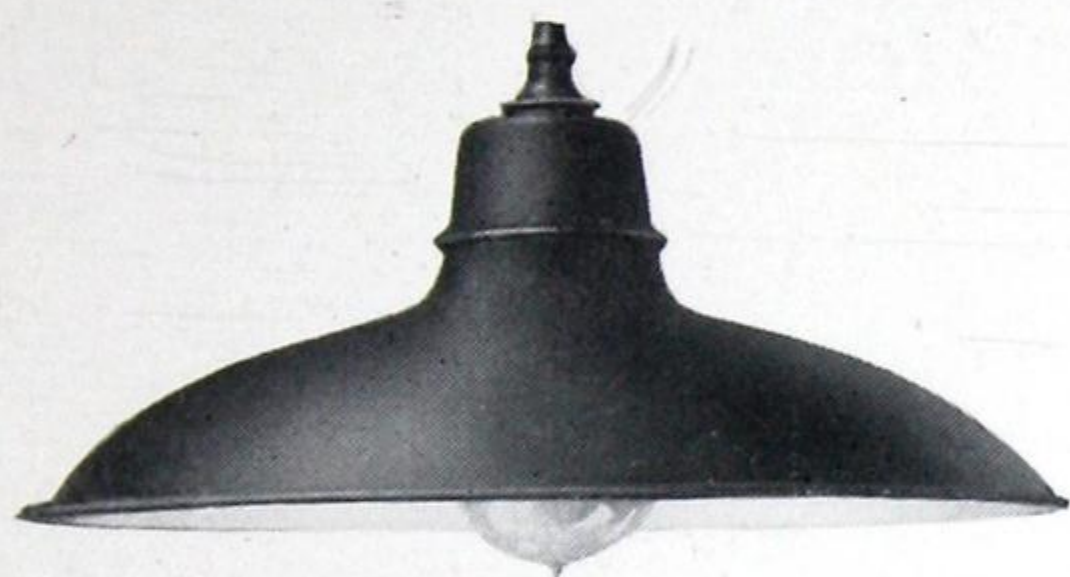
SPACING RATIO : 2—2½ : 1.—For even illumination suspend Dispersive Reflectors at a distance apart from two to two and one-half times their height above the working plane.

No.	Code Word	Diameter	Gasfilled Lamp Recommended	Lamp-holder included	PRICE			
					Open Type		Weather-proof	
529A	WITLE	in. 12	60 W.	B.C.	s. 6	d. 9	s. 11	d. 3
529	WITSE	15	100 W.	B.C.	8	9	13	3
528	WITLO	18	150–300 W.	{ E.S.	23	3	28	0
527	WITKO	21	500–1500 W.	{ Gol.	24	9	29	6
				Gol.	27	9	32	6

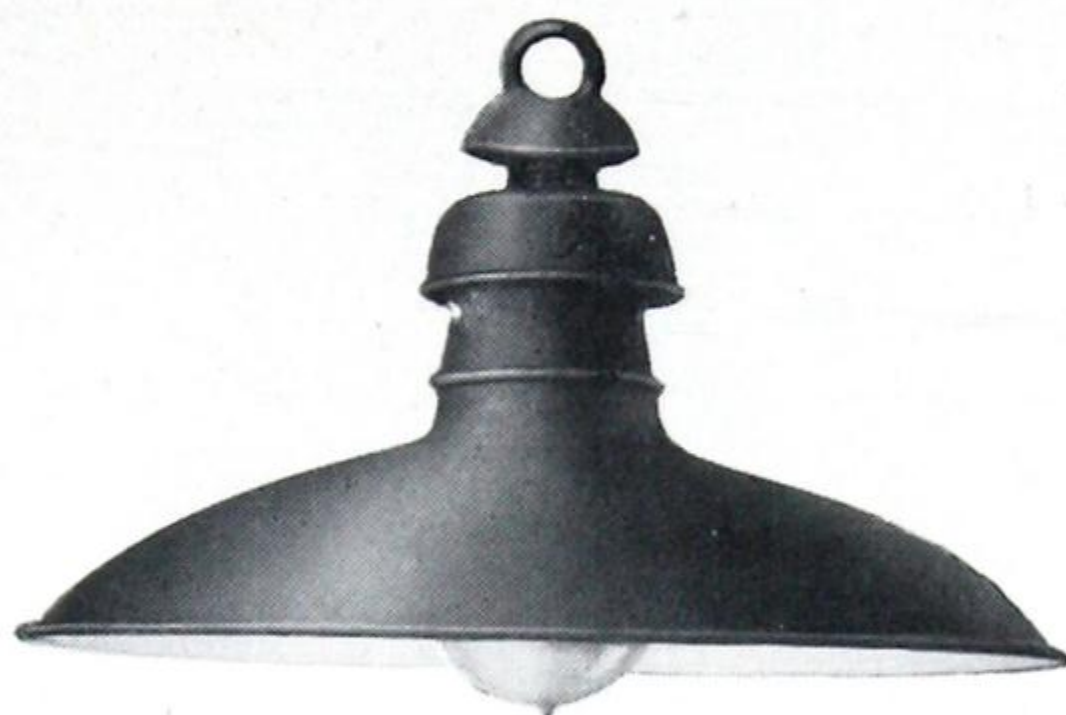
Wardle Fittings.

DISPERSIVE PATTERN

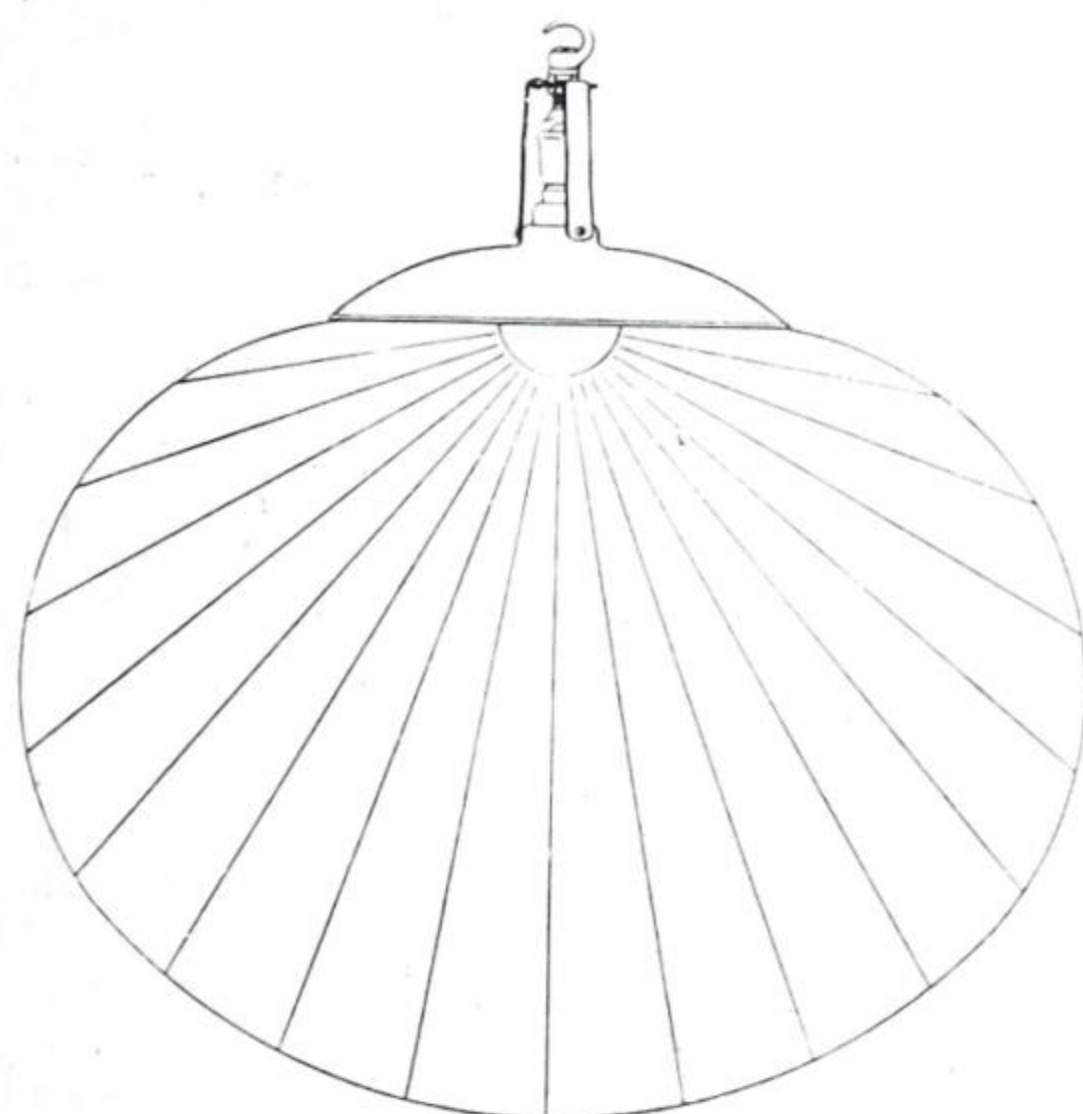
FOR GASFILLED LAMPS.



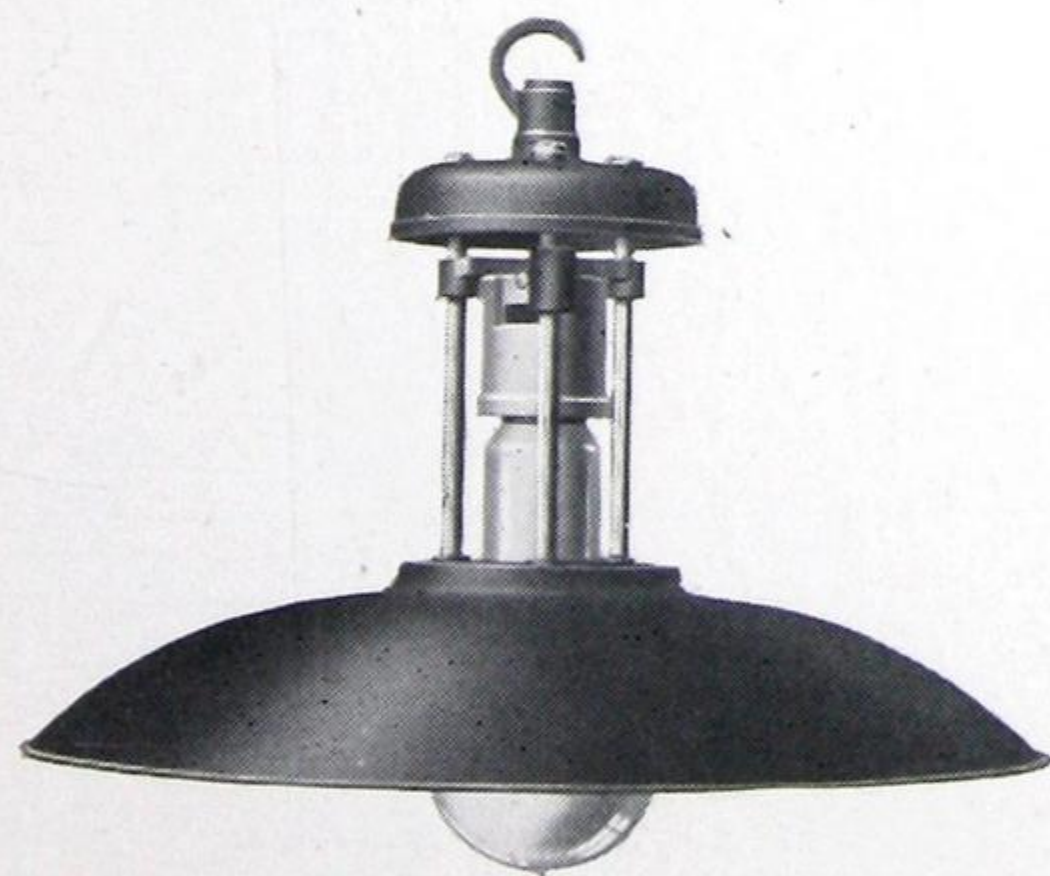
Nos. 529A & 529. Open Pattern



Nos. 529A & 529. Weatherproof Pattern.
Registered Design.



Characteristic Polar Curve.
Result of Actual Test.



Nos. 528 & 527. Open Pattern.
Registered Design.



Nos. 528 & 527. Weatherproof Pattern.
Registered Design.

Wardle Fittings.

ANGLE PATTERN FOR GASFILLED LAMPS.

SPECIFICATION.—Special steel spinning coated with best quality vitreous enamel, white inside, green outside.

The method of support of the Nos. 538 and 537 is by mild steel rust-proofed rods tapped into the cast-iron top and securely locked in position.

Easy focussing adjustment is provided.

The open types illustrated are for inside lighting.

The weatherproof patterns are supplied with aterneplate sleeve and weatherproof suspender.

The open type, No. 539, is a two-piece spinning and is arranged for attachment to the shade ring of lampholder. The weatherproof pattern, No. 539, is supplied with a cast-iron cowl and weatherproof suspender or coupling.

All reflectors are complete with lampholder and suspension, and can be supplied with "Wardle" Patent Anti-Vibrators if required.

Special attention is drawn to the fact that all "Workslite" Reflectors are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface free from all chipping tendency secured.

APPLICATION.—Angle pattern "Workslite" Reflectors are for use in all positions where the light is required at an angle. For boiler front lighting, switchboards, engine rooms, sheds, loading ways, shops where cranes prohibit overhead lighting, coal handling plant and other special positions.

No.	Code Word	Diameter	Gasfilled Lamp recommended	Lamp-holder included	PRICE			
					Open Type		Weather-proof	
539	WELKO	in. 8½	40-100 W.	B.C.	s. 7	d. 6	s. 12	d. 0
538	WETSI	11½	150-500 W.	{E.S.	20	9	25	6
537	WESTI	14½	1000-1500 W.	{Gol.	22	3	27	0
				Gol.	28	0	32	9

Wardle Fittings.

ANGLE PATTERN

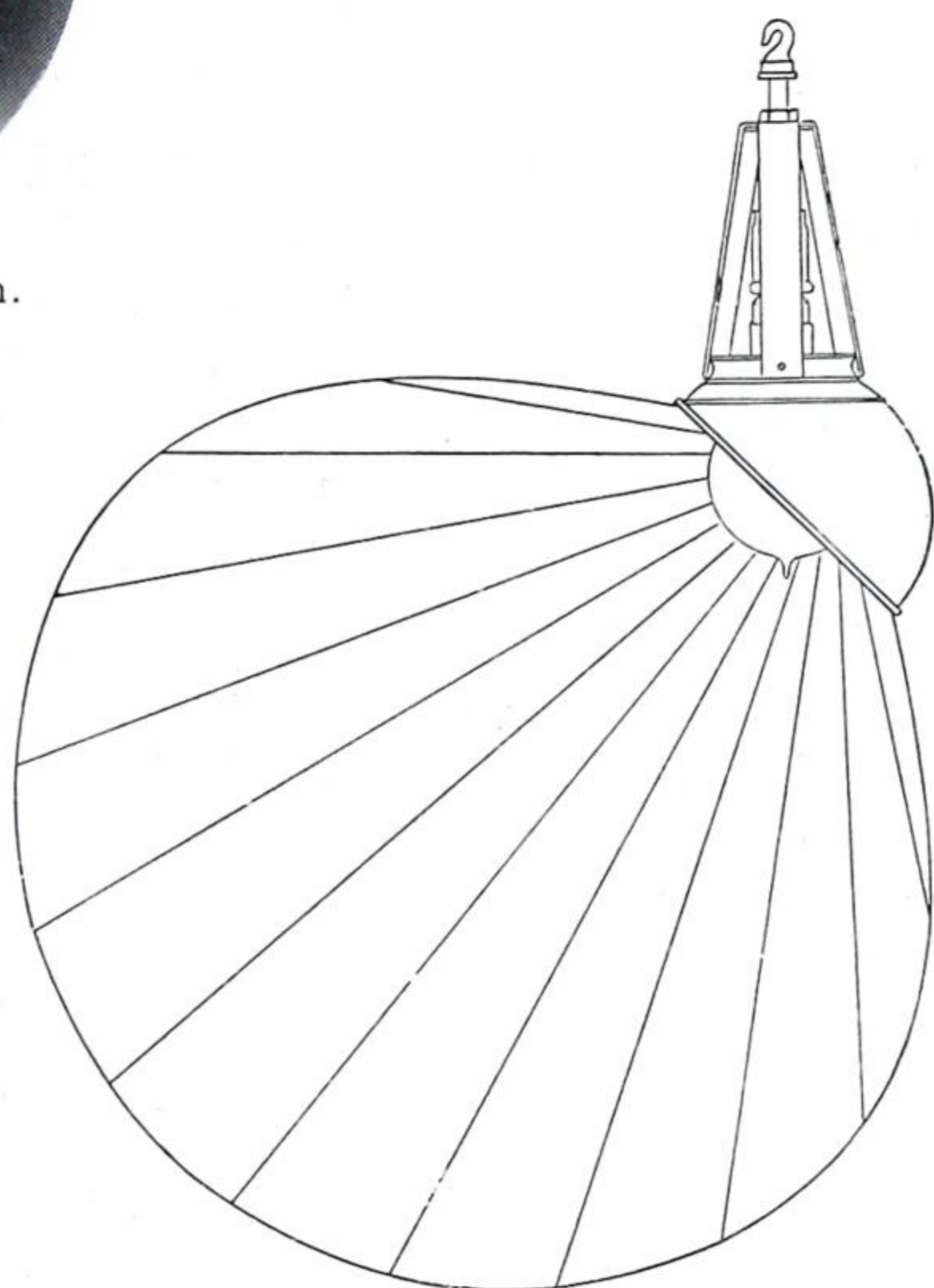
FOR
GASFILLED
LAMPS.



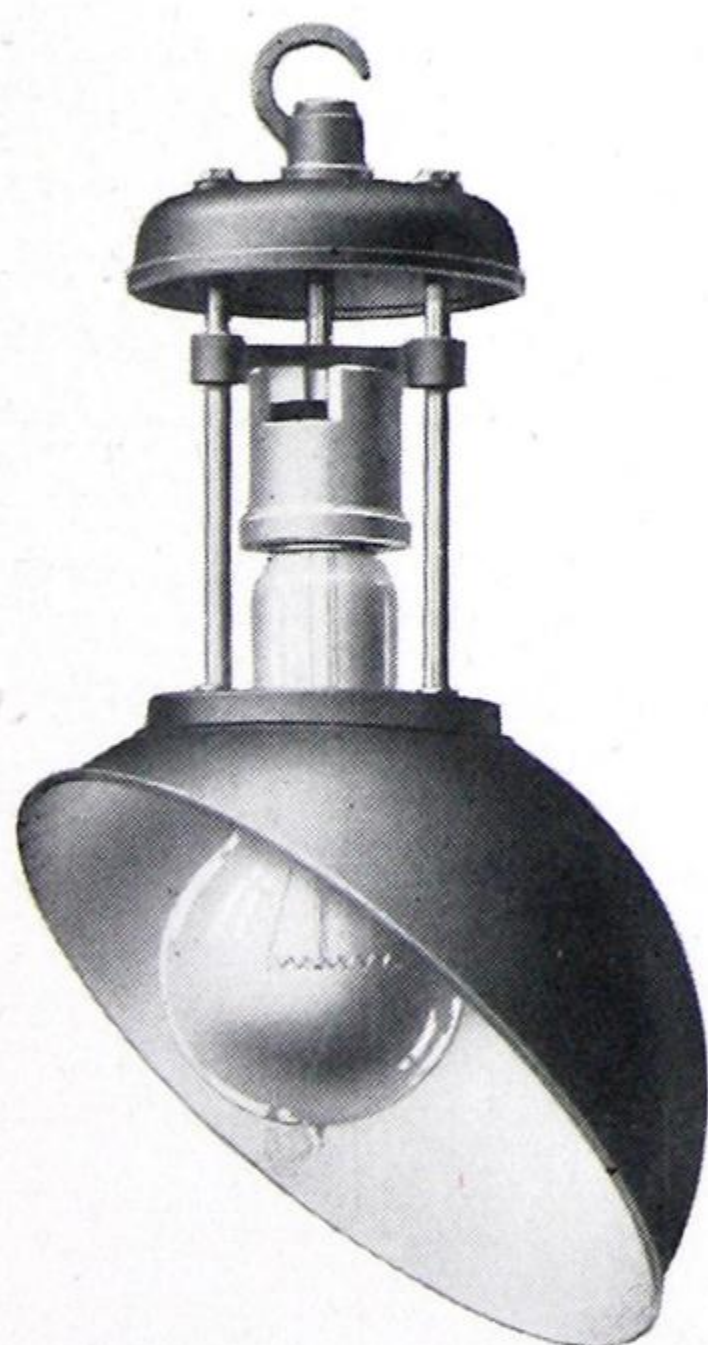
No. 539.
Open Pattern.



No. 539.
Weatherproof Pattern.



Characteristic Polar Curve.
Result of Actual Test.



Nos. 538 & 537.
Open Pattern.
Registered Design.



Nos. 538 & 537.
Weatherproof Pattern.
Registered Design.

Wardle Fittings.

GIRDER FITTINGS FOR MACHINE LIGHTING WITH METAL FILAMENT LAMPS.



Double Pattern "Girder" Fitting and "V" Pattern Base.

SPECIFICATION.—Each "Girder" arm consists essentially of flat steel links, spaced apart, but rigidly connected and forming a sound type of girder construction. The arms are assembled to form fittings with one, two or three jointed units as required, and the lower portion is connected to a turntable base, which is carried in turn by a lower base designed to meet the varying requirements of machine tools. The upper end of the link unit terminates in a hinged headpiece, specially designed to carry a swivelling reflector.

The reflector is of the Intensive pattern, and provides the most useful distribution for all classes of machine tool lighting, etc. The spinning is of aluminium, with a special reflecting surface. One 20-watt lamp will be found ample for all requirements.

The method of construction of the "Girder" Fitting enables the leads to be efficiently protected, while at the same time exposing them to view. The disadvantages attending the use of enclosed leads, when tubular arms are used with adjustable brackets, are thus eliminated.

All joints are made with standard pattern steel bolts, fitted with spring washers and two nuts, and either an "H" pattern base for fixing on a horizontal surface of a machine or bench, or a "V" pattern base for bolting to a vertical surface or wall, is supplied in each case.

APPLICATION.—The "Girder" Fitting is the outcome of considerable practical experience in machine lighting of every class, and will be found eminently suitable for the lighting of lathes, planing, drilling, grinding and surfacing machines, and for such purposes as marking-off tables, inspection, moulding and core-making benches, and for other numerous positions in Engineering Workshops, where it would not be economical to instal a general lighting system providing a sufficient intensity for fine work.

Prices and further particulars on application.

Wardle Fittings.

“INVERLITE” SECTION.

Apart from adequacy, now a well-recognised factor in good lighting, uniformity, diffusion and the elimination of glare are equally desirable features, calling for special attention in the design of lighting installations.

Diffusion is of extreme importance in almost all classes of indoor work, and may be defined as the degree in which the illumination received at any point is composed of light coming from different directions.

If the light received at any point comes from a great many directions the diffusion is good, but if from one direction only, as in local lighting, the diffusion is poor.

With indirect and semi-indirect lighting the diffusion is excellent, since the majority of the light received on the working plane comes from a large area—the ceiling or top reflector.

Semi-indirect lighting results in the practical elimination of shadows and avoids the casting of extraneous shadows on the work.

Direct reflections or “high lights” on glazed or polished surfaces are also avoided, both features being of great value in any room where close work is performed.

An incandescent filament has a serious effect on the eye, causing annoyance, headache, and other troubles, while frequently reducing the ability to see. “Dazzling” is akin to glare, and may be occasioned by a direct view of an exposed light source. Annoying reflections from polished surfaces may be treated under the same head, and are a frequent source of trouble in the majority of direct lighting installations.

Semi-indirect installations incorporating “Inverlite” Fittings and “Opalba” Bowls afford the correct solution of the glare problem. The diffusion is excellent, eye protection is assured, “high lights”, etc., are avoided, while an increased and improved quality of output is generally secured.

Wardle Fittings.

EXTERNAL REFLECTOR PATTERN FOR GASFILLED LAMPS.

SPECIFICATION.—Special quality spun steel reflector, coated with finest vitreous enamel, white inside, green outside.

In No. 148 the "Opalba" Bowl is suspended by three chains attached to a light metal ring, and in No. 348 by a heavy brass band and a more ornamental chain.

A special top spinning supports the reflector and lampholder. The spinning is punched with an $1\frac{1}{8}$ " hole for use with the B.C. holder. The hole is bushed and a porcelain batten holder of the E.S. type securely fixed to the underside of the spinning is supplied for use with the 150-200 watt sizes of gasfilled lamps.

The No. 520 is similar to the No. 348, but has been adapted for the larger sizes of gasfilled lamps.

All fittings are complete with lampholder and suspension and can be supplied with bowls of any diameter if the standard sizes are not to requirements.

Special attention is drawn to the fact that all "Inverlite" reflectors are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface, free from all chipping tendency secured.

APPLICATION.—Semi-indirect lighting is to be preferred for all places where close work is performed, and is practically essential in such rooms as general and private offices, drawing offices, school rooms, tool rooms, sorting rooms, inspection departments and other places where the fine nature of the work carried out makes an excessive demand upon the eyes of the workers.

Good diffusion, evenness, the elimination of shadows and glare, eye protection, and an increased optical efficiency are characteristics of "Inverlite" installations, and "Inverlite" Fittings should be used whenever possible to replace direct and glaring light sources.

For office lighting, clothing factories, drawing offices, tool rooms, sorting rooms, painting and varnishing, pattern making, and similar classes of work, where a white ceiling is not available, "Inverlite" Fittings will afford complete satisfaction.

SPACING RATIO : $1\frac{1}{2}$ —2 : 1.—To secure even illumination on the working plane, suspend "Inverlite" Fittings at a distance apart from one and one-half times to twice their height.

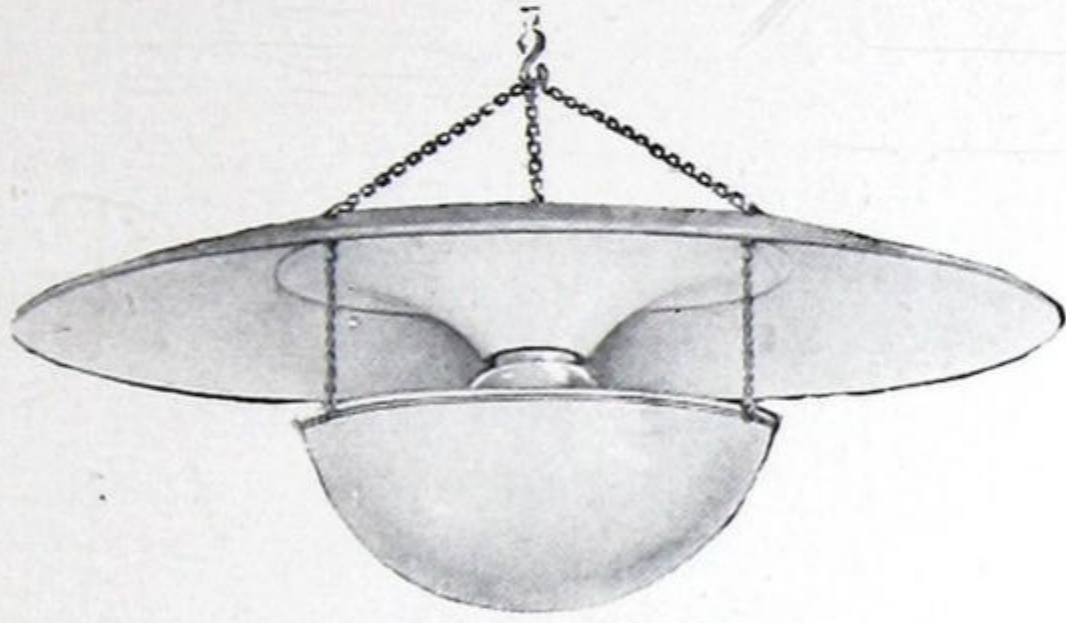
No.	Code Word		Dia- meter of Reflec- tor	Dia- meter of Bowl	Gasfilled Lamp recommended	Lamp- holder included	PRICE			
	Fitting Complete	Spare Bowl					Fitting Complete		Spare Bowl	
			in.	in.			s.	d.	s.	d.
148	TIMER	RINER	24	10	100-200 W.	{ B.C.	33	0	6	3
						{ E.S.	34	6	6	3
348	TEVEN	RINER	24	10	100-200 W.	{ B.C.	42	0	6	3
						{ E.S.	43/6 54	0	6	3
520*	TENEV	RIVEL	24	14	300-500 W.	Gol.	55	6	13	9
428	TINEV	RINER	18	10	100-200 W.	{ B.C.	38	6	6	3
						{ E.S.	40	0	6	3

* With light brass ring ; 43/6 with E.S. holder, 45/- with Gol. holder ; add **OL** to code word.

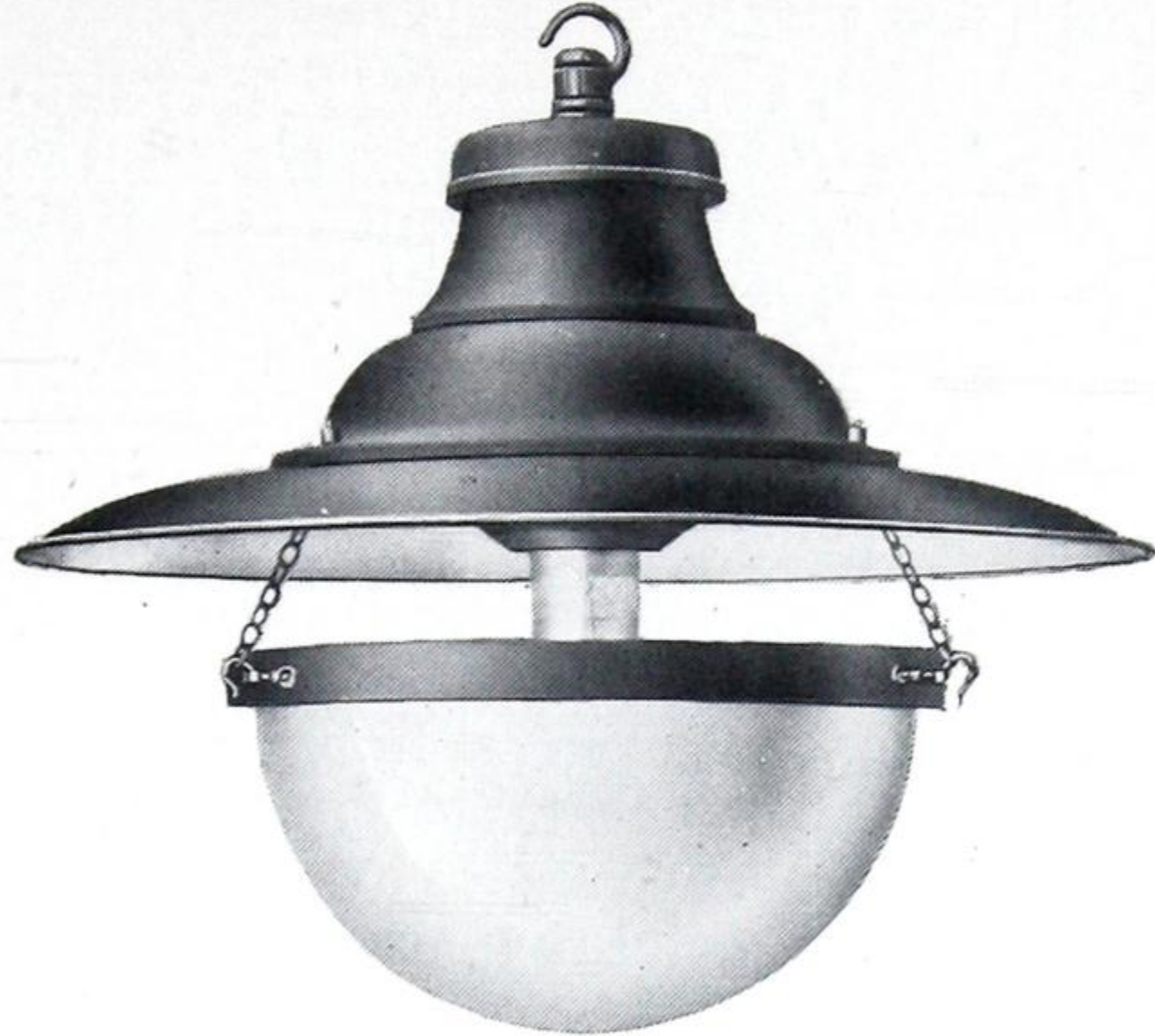
Wardle Fittings.

EXTERNAL REFLECTOR PATTERN

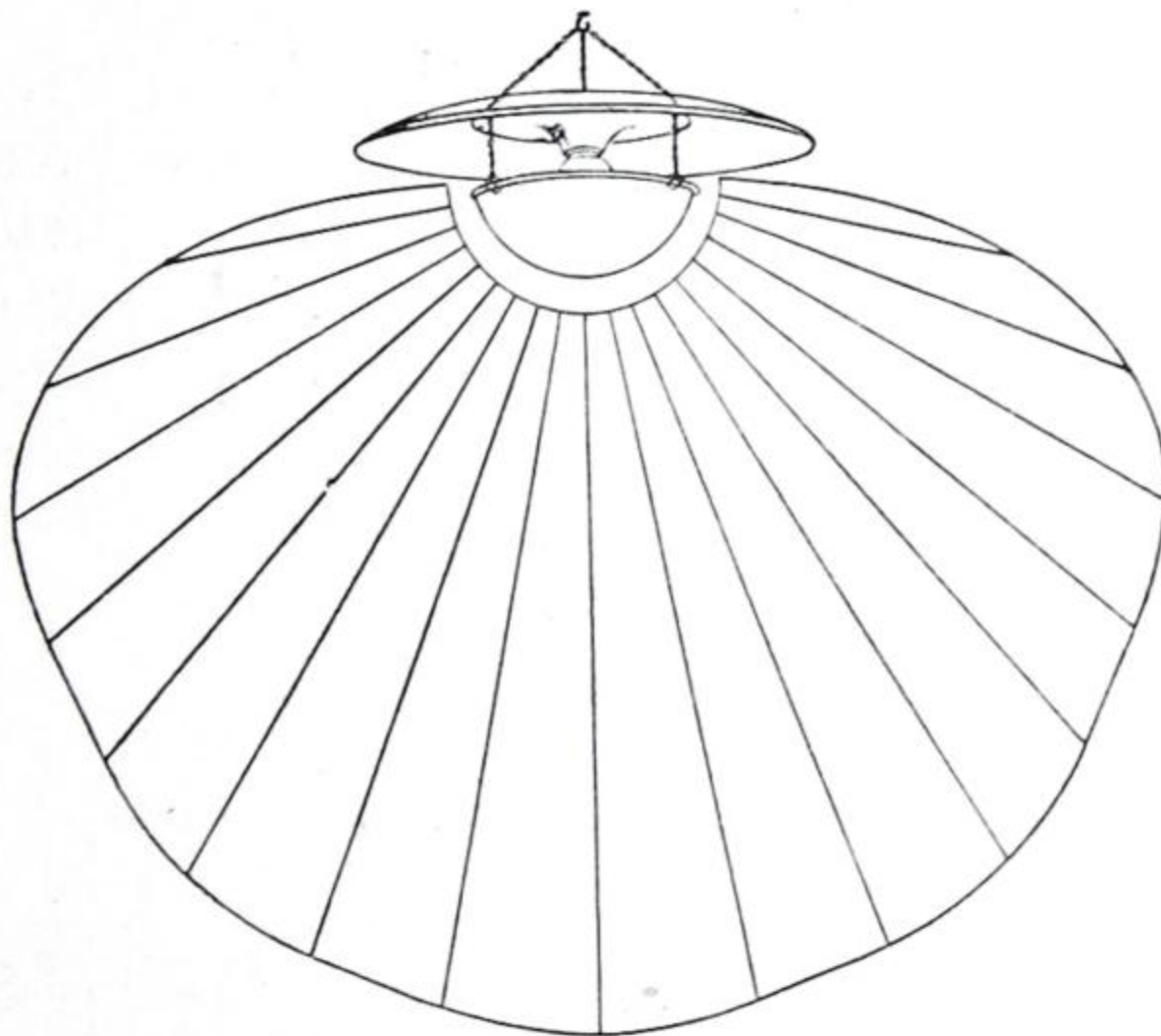
FOR GASFILLED LAMPS.



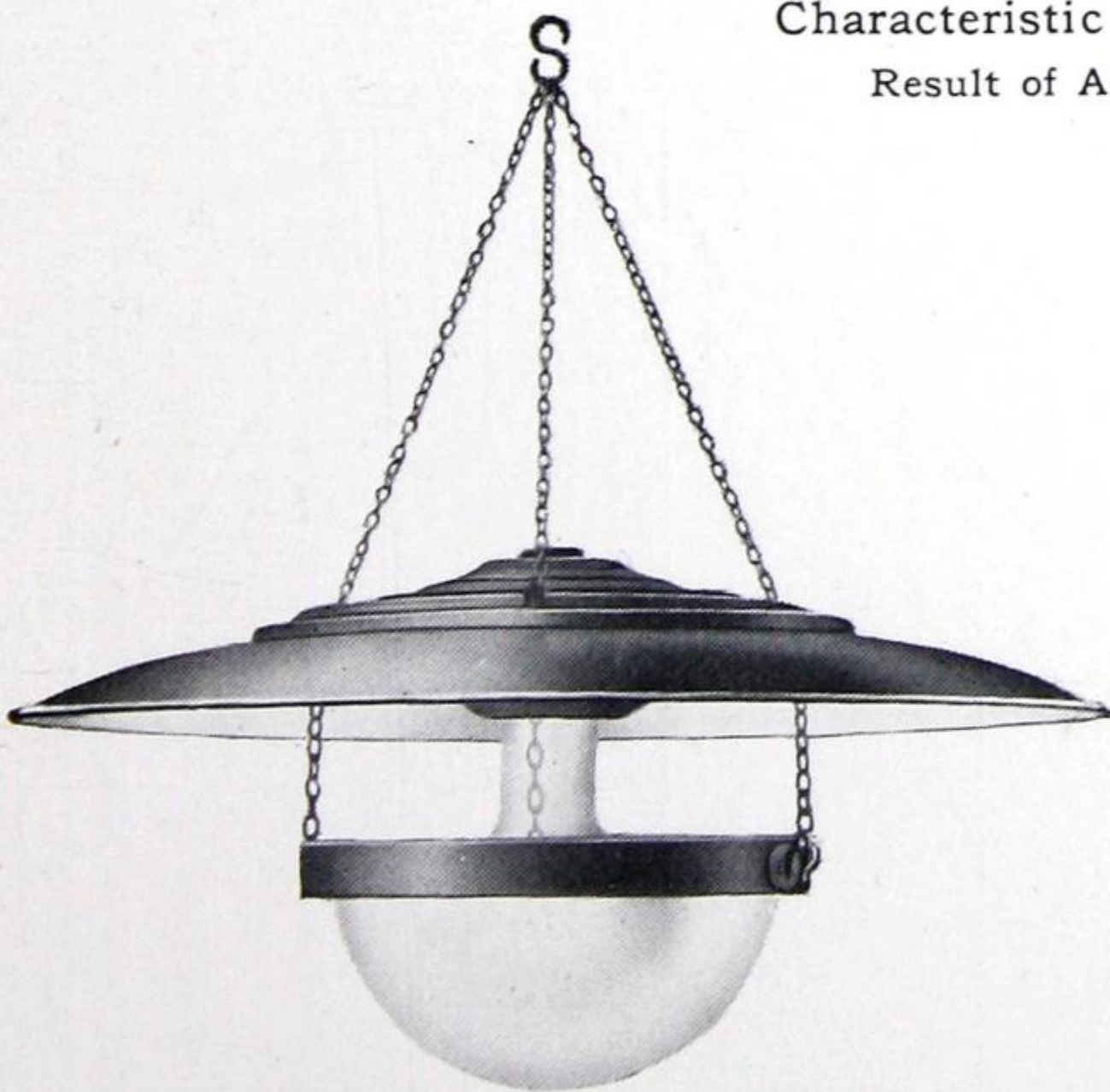
No. 148. "Inverlite" Fitting.



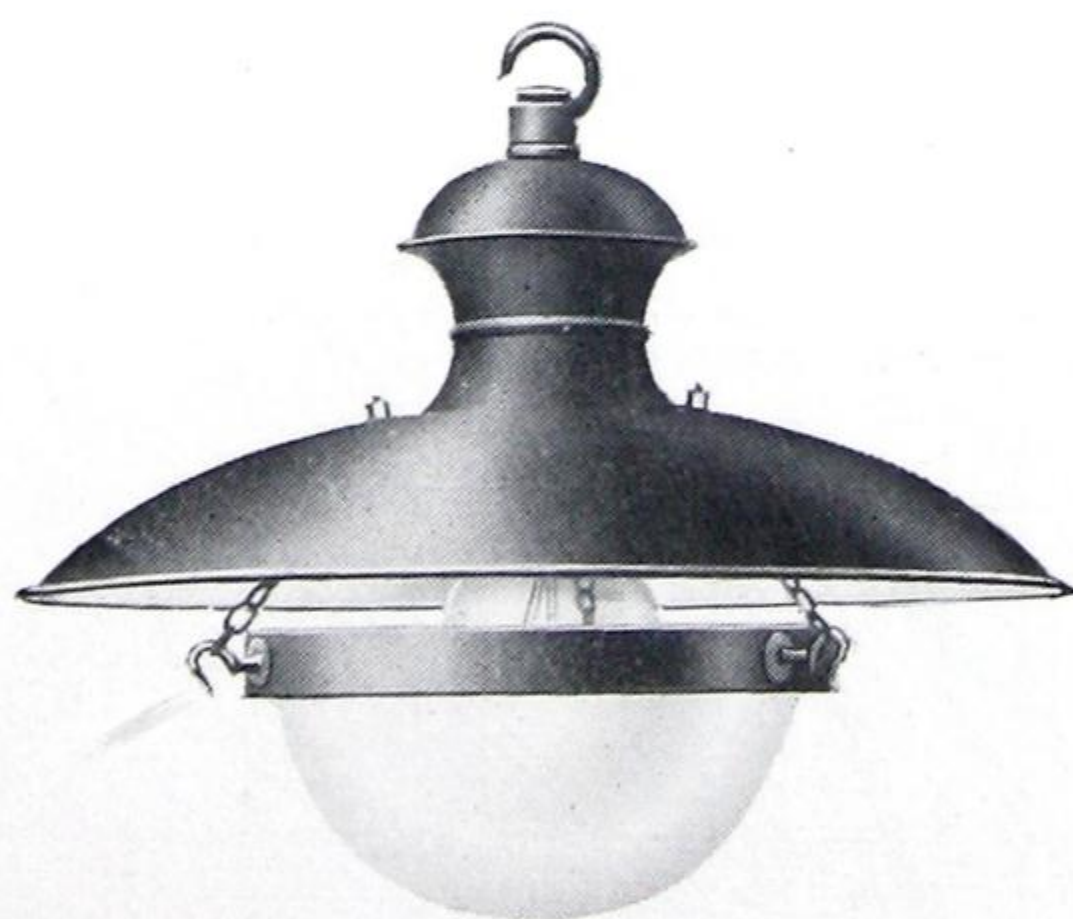
No. 520. "Inverlite" Fitting.



Characteristic Polar Curve.
Result of Actual Test.



No. 348. "Inverlite" Fitting.



No. 428. "Inverlite" Fitting.

Wardle Fittings.

CEILING PATTERN FOR GASFILLED AND VACUUM LAMPS.

SPECIFICATION.—Special quality spun steel reflector, coated with the finest white vitreous enamel.

Nos. 145 and 246 have the reflector mounted on a metal disc.

In No. 145 the disc is provided with a hole $1\frac{1}{8}$ in. diameter for shading attachment to a batten type lampholder.

In No. 246 three screw holes are provided in the metal disc for direct attachment to the ceiling or a wood pattrass. The lampholder is screwed to the under side of the disc.

Nos. 345 and 346 are similar in design and application to the above, but are more ornamental. The reflector is mounted on a white enamelled corona, and the "Opalba" Bowl is supported in a heavy polished brass band.

No. 146 is similar to No. 246 but is intended for four 60-watt lamps, the bowl being centrally supported.

In Nos. 650 and 651 the "Opalba" Bowl is suspended by three chains and a light metal ring, and to a copper, or enamelled, cap at the apex of the reflector.

Nos. 750 and 751 are similar in design and application to the above, but are more ornamental. The tulip ornament is supplied with the No. 751 only.

APPLICATION.—Nos. 145, 246, 650 and 651 are simple and inexpensive fittings, but are exceedingly efficient and very effective for offices, clothing factories, assembly rooms, sorting rooms, works, etc., in which a white ceiling is available.

Nos. 345, 346, 750 and 751 are similar to the above and should be used under similar conditions where a more ornamental fitting is desirable.

No. 146 is a cluster fitting and is suitable for four 60-watt lamps.

As an example of the application of this particular type of fitting a No. 651 with a 300-watt gasfilled lamp has been used to replace a 600-watt inverted arc lamp with a considerable gain in efficiency and the entire elimination of carbon troubles, flickering, etc.

SPACING RATIO : $1\frac{1}{2}$ —2 : 1.—For even illumination suspend "Inverlite" Fittings at a distance apart from one and one-half times to twice their height.

No.	Code Word		Dia- meter of Reflec- tor	Dia- meter of Bowl	Gasfilled Lamp recommended	Lamp- holder included	PRICE			
	Complete Fitting	Spare Bowl					Fitting Complete		Spare Bowl	
			in.	in.			s.	d.	s.	d.
145	TILEN	RINER	12	10	100-150 W.	{ B.C.	17	0	6	3
						{ E.S.	18	6	6	3
345	TENER	RINER	12	10	100-150 W.	{ B.C.	34	0	6	3
						{ E.S.	35	6	6	3
246	TINIL	RIVEL	18	14	200-500 W.	{ E.S.	34	6	13	9
						{ Gol.	36	0	13	9
346	TELIN	RIVEL	18	14	200-500 W.	{ E.S.	60	0	13	9
						{ Gol.	61	6	13	9
146	TERIN	RIVEN	18	14	Four 60 W.	B.C.	60	0	18	0
650	VERIN	RINER	12	10	100-200 W.	{ B.C.	17	0	6	3
						{ E.S.	18	6	6	3
750	VENIR	RINER	12	10	100-200 W.	{ B.C.	25	6	6	3
						{ E.S.	27	0	6	3
651	VINEL	RIVEL	18	14	300-500 W.	Gol.	35	0	13	9
751	VETIN	RIVEL	18	14	300-500 W.	Gol.	49	0	13	9

Wardle Fittings.

CEILING PATTERN

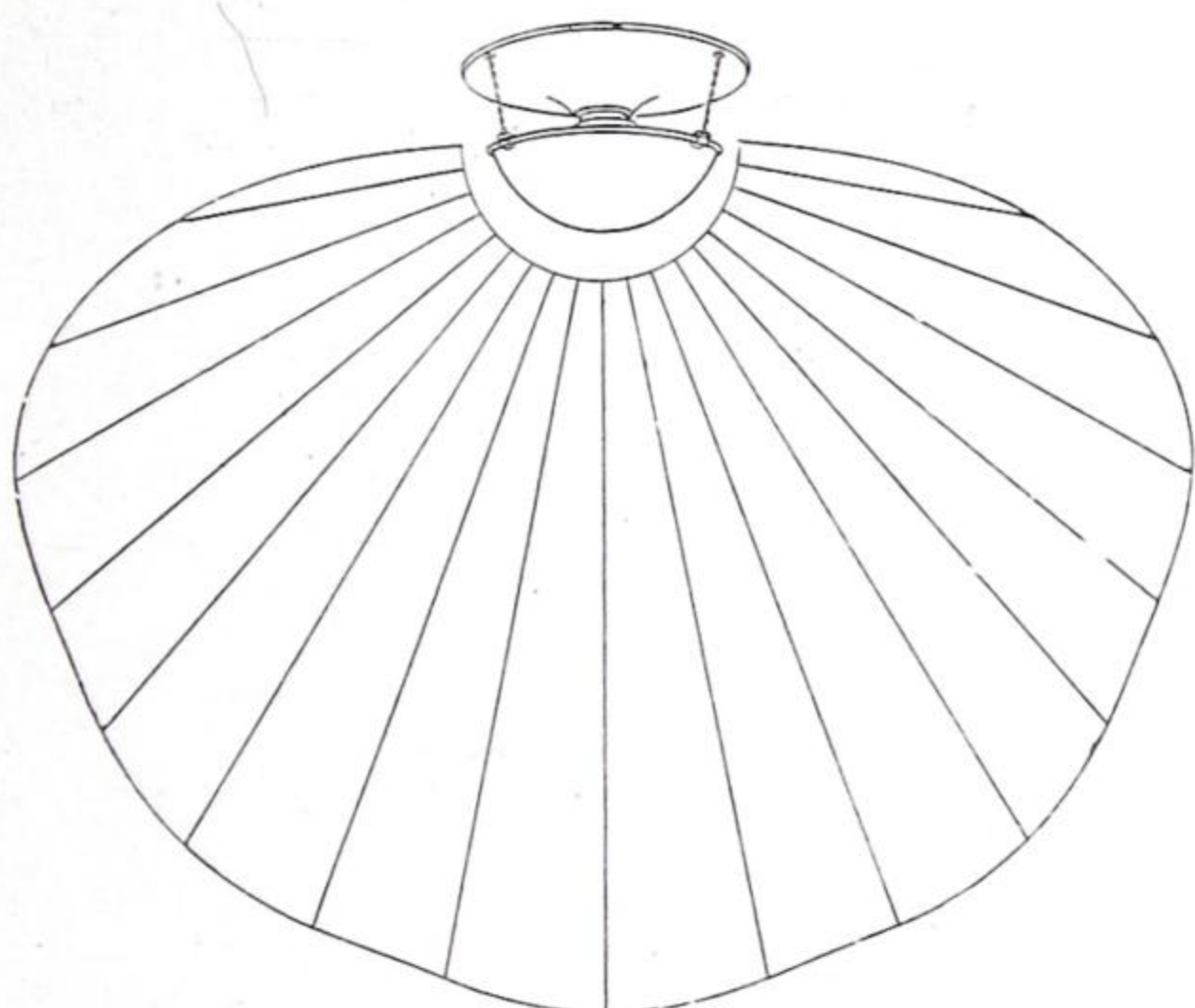
FOR GASFILLED AND VACUUM LAMPS.



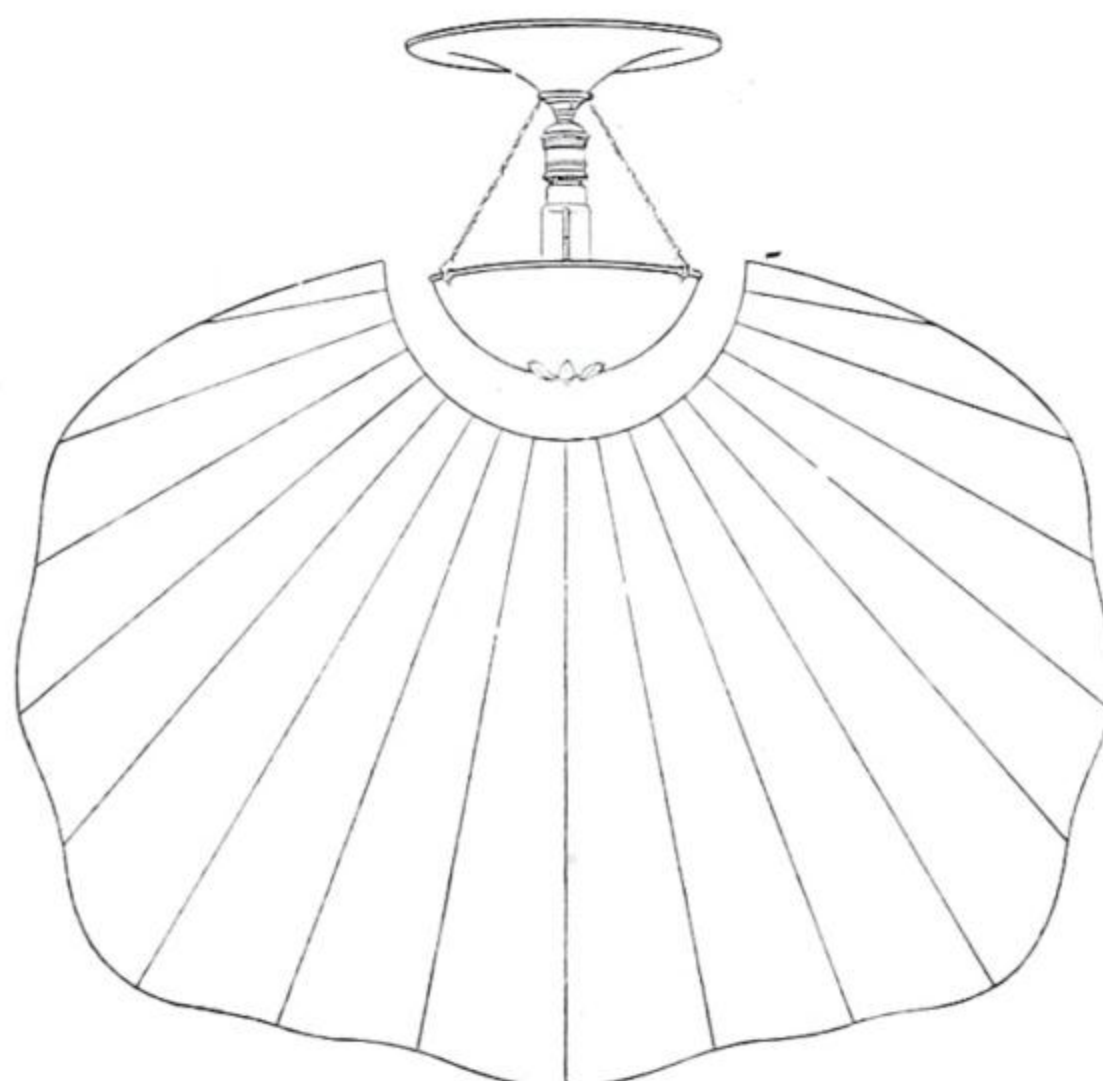
Nos. 145 & 246.
"Inverlite" Fittings.



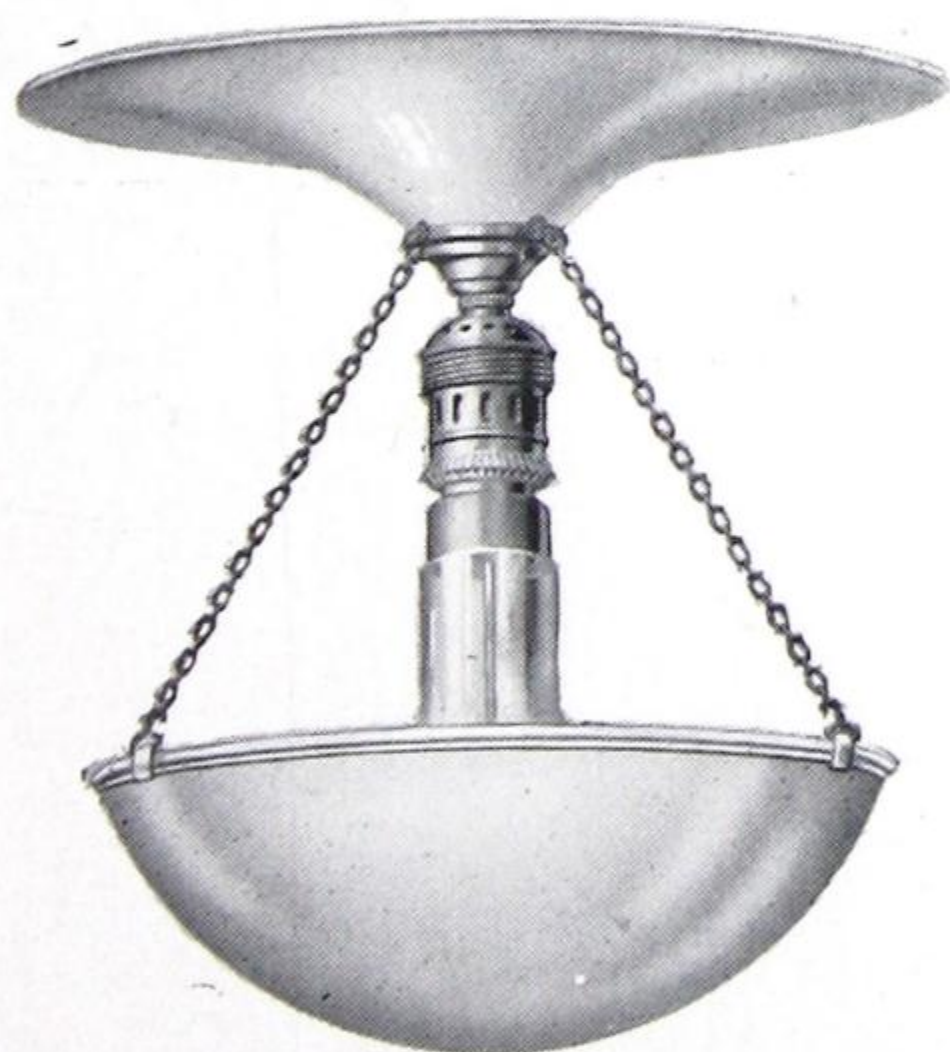
Nos. 345 & 346.
"Inverlite" Fittings.



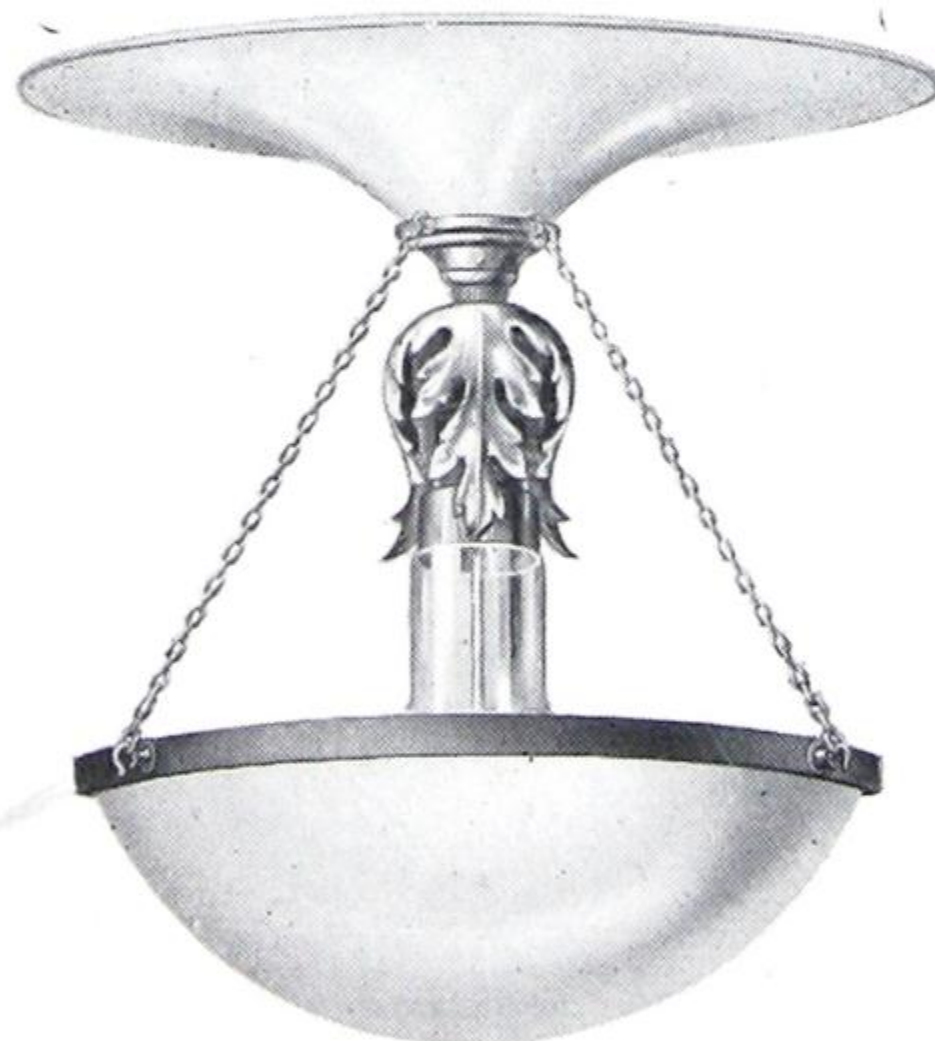
Characteristic Polar Curve.
Result of Actual Test.



Characteristic Polar Curve.
Result of Actual Test.



Nos. 650 & 651.
"Inverlite" Fittings.



Nos. 750 & 751.
"Inverlite" Fittings.

Wardle Fittings.

SUSPENSION BOWL FITTINGS

FOR GASFILLED AND VACUUM LAMPS.

SPECIFICATION.—Nos. 645, 645A, 646 and 646A are four sizes of “Opalba” Bowl Fittings.

The bowl is supported in a light brass ring, and suspended from the brass ceiling plate by three oval link brass chains.

Nos. 745, 745A, 746 and 746A are similar to the above but the bowls are supported in a heavy gauge brass band.

No. 525 is an enclosed “Inverlite” Fitting and comprises an “Opalba” bowl and bell.

No. 525A is an open “Bell” fitting and is similar to the No. 525 but without the bowl.

The polished brass band and gallery are ventilated, and a brass ceiling plate and length of chain to order are supplied for suspension purposes.

The Nos. 525 and 525A are admirably adapted for use in corridors, porches, halls, cinemas, shops, showrooms, etc.

“Inverlite” Fittings can be supplied in any finish to order at a slight extra charge.

No.	Code Word		Diameter of Bowl	Gasfilled Lamp recommended	Lamp-holder included	PRICE			
	Fitting Complete	Spare Bowl				Fitting Complete		Spare Bowl	
			in.			s.	d.	s.	d.
645	OPABA	RINER	10	100–200 W.	—	15	3	6	3
645A	LABOP	RITOL	12	100–200 W.	—	18	3	9	0
745	PALAB	RINER	10	100–200 W.	—	24	0	6	3
745A	BAPLO	RITOL	12	100–200 W.	—	28	0	9	0
646	OPLAB	RIVEL	14	300–500 W.	—	24	0	13	9
646A	LAPBO	RINOR	16	300–500 W.	—	35	3	25	0
746	PLABO	RIVEL	14	300–500 W.	—	34	6	13	9
746A	BOALO	RINOR	16	300–500 W.	—	48	9	25	0
525	INVET	RINEO	10 $\frac{3}{4}$	150–300 W.	{ E.S. Gol.	37	0	6	3
525A	NIVET	—	10 $\frac{3}{4}$ {	100 W.	B.C.	21	0	7	6
				150–200 W.	E.S.	22	6	7	6

Wardle Fittings.

SUSPENSION BOWL FITTINGS

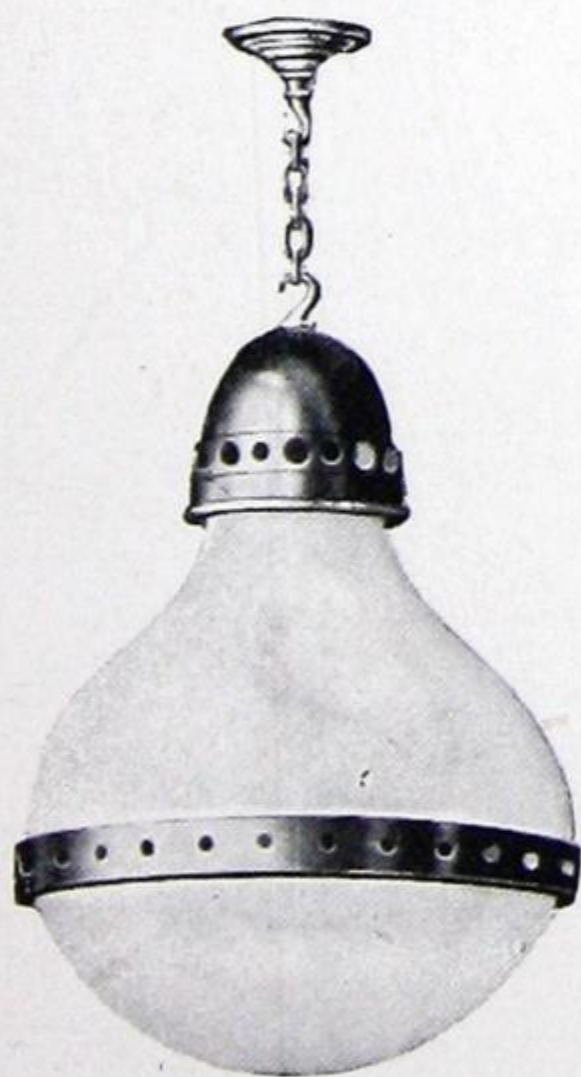
FOR GASFILLED AND VACUUM LAMPS.



Nos. 645, 645A, 646, 646A.
"Inverlite" Fittings.



Nos. 745, 745A, 746, 746A.
"Inverlite" Fittings.
(Bottom Ornament not supplied.)



No. 525.
"Inverlite" Fitting.



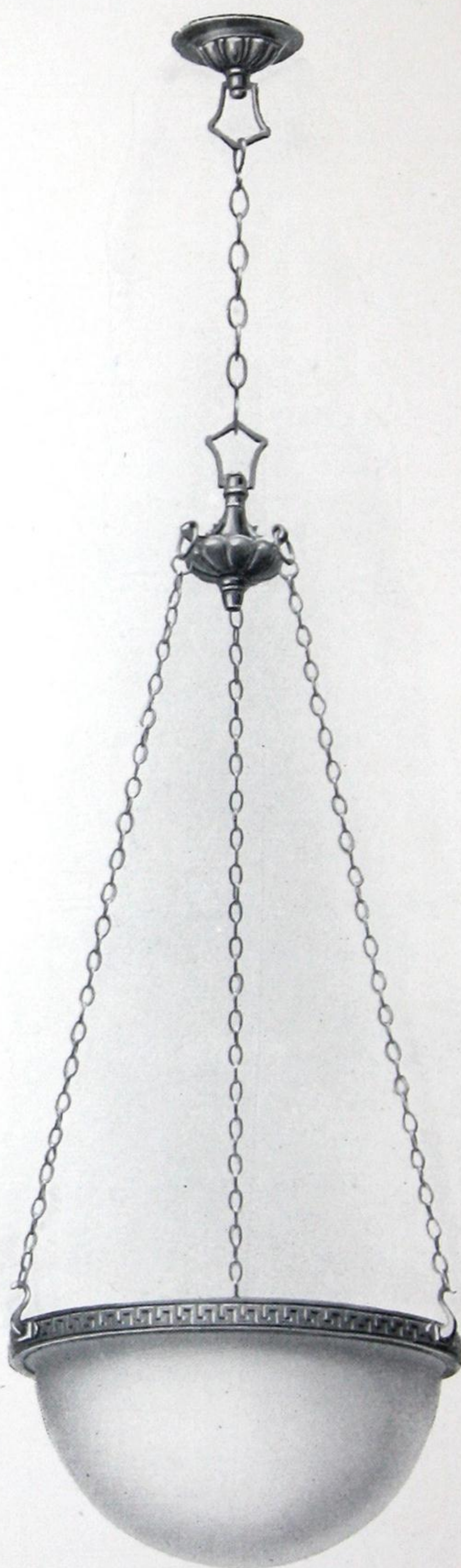
No. 525A.
"Inverlite" Fitting.

Wardle Fittings.

ORNAMENTAL "INVERLITE" FITTINGS.



No. 9215.



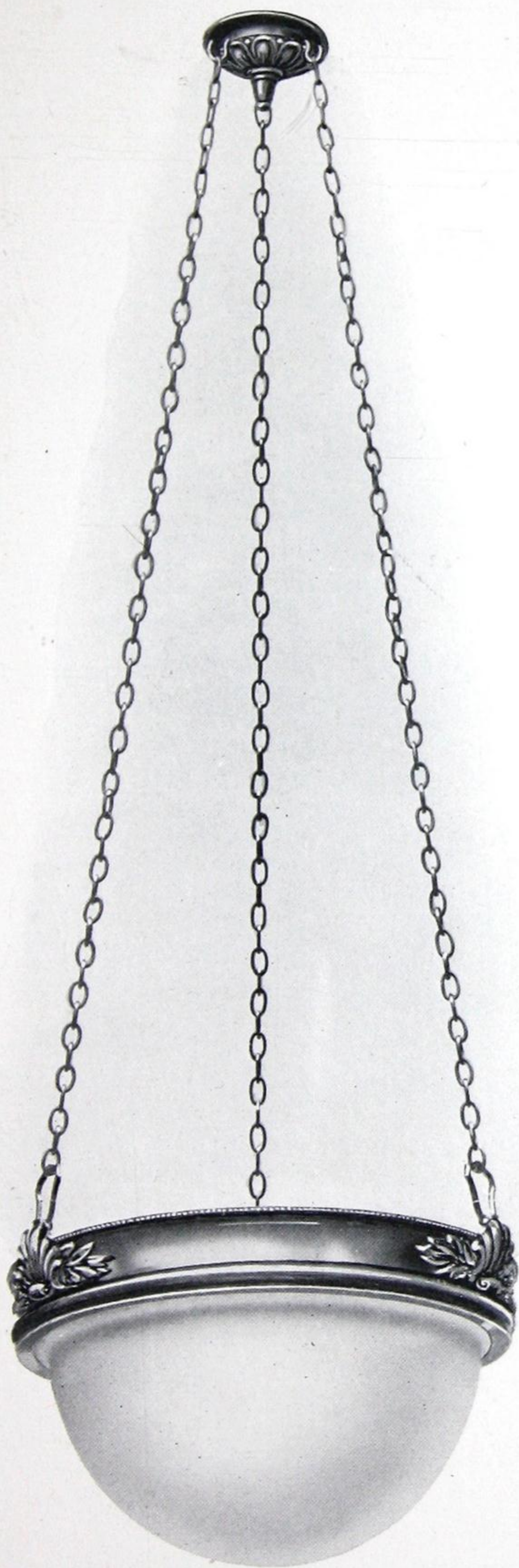
No. 5315.

Prices on application.

Please state finish and size of Bowl required.

Wardle Fittings.

ORNAMENTAL "INVERLITE" FITTINGS.



No. 4315.



No. 0315.

Prices on application.

Please state finish and size of Bowl required.

Wardle Fittings.

ORNAMENTAL "INVERLITE" FITTINGS.



No. 2215.



No. 7115.

Prices on application.

Please state finish and size of Bowl required.

Wardle Fittings.

LANTERN SECTION.

Until recently the success of an outside lighting unit was not infrequently judged by the brightness of the unit itself.

Thanks, however, to the better knowledge of the subject, units are now judged by their light output, or efficiency, and by the light distribution afforded.

The outside lighting problem is an exceedingly difficult one, and the findings of the Departmental Committee on Lighting are of great interest in this connection. The Committee recommend "that in all open places in which persons are employed during the period between one hour after sunset and one hour before sunrise, and in any dangerous parts of the regular roads, or way over a yard, or other space forming the approach to any place of work, the illumination on a horizontal plane at ground level shall not be less than .05 foot candle." This is, of course, a minimum value, but the fixing of even a minimum value is a sufficient indication of the fact that all outside lighting problems require very careful consideration.

The lighting of open yards and approaches may be compared with that of streets, and in all outside spaces where persons are employed the lighting must be adequate for the purpose.

A well-designed lantern for outside use should afford a sufficiency of light so distributed as to ensure an approximately even illumination with the lanterns arranged at the correct height and distances apart.

Further, the intrinsic brilliancy of the lantern itself should be as low as possible compatible with economy, while the suspension height should be such as entirely to eliminate glare and interference with vision.

To secure these objects it is essential that the maximum candle-power should obtain at approximately 20 degrees below the horizontal, and that good diffusion should be provided to secure the avoidance of objectionable shadows.

Too much stress cannot be laid upon the necessity for securing uniform illumination in outside lighting. The avoidance of an intense illumination directly beneath the lamps and of dark spaces midway between them is essential, since with a greater variation in illumination than 10 to 1 the risk of accident is unnecessarily great.

"Wardle" Lanterns afford the correct solution to the outside lighting problem, and enable the whole of the Home Office Committee's recommendations with regard to the adequate and scientific lighting of streets, stations, sidings, docks, yards, etc., to be effectively and economically carried out.

"Wardle" service is unique.

Our distributors are in constant touch with us in matters of scientific illumination. Their advice is offered free, and their services are at the disposal of all persons interested in the preparation of lighting schemes.

Wardle Fittings.

“ PRIMUS ” LANTERNS FOR ALL OUTSIDE LIGHTING REQUIREMENTS.

Maximum Efficiency. Minimum Glare.
Sound Construction. Practically Indestructible.

SPECIFICATION.—Special cast-iron reflector, vitreous enamelled white on the reflecting surface. Other parts finished with red oxide paint in and out, or colour to order. The support from the top casting is by two rods which hold the terneplate sleeve in compression between them, and in addition carry the lampholder, the latter being attached to a sliding bar to provide easy focussing adjustment. Ample ventilation is provided, but the efficient trapping arrangements prevent driving rain from striking the lamp.

The globe is held in position by a hinged cast-iron ring, vitreous enamelled white, and fixed by an “Arm” nut. Opening and closing may readily be effected with one hand. The top casting is tapped $\frac{1}{2}$ in. gas in the Nos. 512 and 513 and $\frac{3}{4}$ in. gas in the Nos. 514 and 514B as standard, or to order.

“Wardle” Patent Anti-Vibrators can be supplied with “Primus” Lanterns if required.

Special attention is directed to the “Wardle” patent globe ring which can be supplied if required at a slight extra charge. By its use globe breakage is reduced to a minimum and globes may be opened and cleaned with the minimum of handling and exertion.

APPLICATION.—“Primus” Lanterns have been designed to fulfil all outside lighting requirements, and for use in the most exposed positions. The shape of the internal reflector secures the maximum distribution at the most favourable angles without upward or horizontal rays. With the lamp filament level with or just above (but not below) the bottom of the internal reflector the characteristic distribution indicated will be obtained.

While it should be specially noted that a large outside reflector is entirely unnecessary to secure the characteristic distribution curves afforded, cases arise, platform lighting for example, in which preference is expressed for a reflector design. To meet such requirements the No. 513 “Primus” Lantern has been designed.

Outside terminals and an external focussing device can also be supplied if required at a slight extra charge.

SPACING RATIO.—A single “Primus” Lantern with one 500-watt gasfilled lamp, when suspended 30ft. above the ground, will light up an area with a radius of 80ft. from the lamp as centre with a minimum illumination of .05 foot candles and a maximum value directly underneath the lamp of 1.75 foot candles. A single row of “Primus” Lanterns, under similar conditions, will afford a minimum illumination along the row of .05 candles when suspended at a distance apart of 200ft.

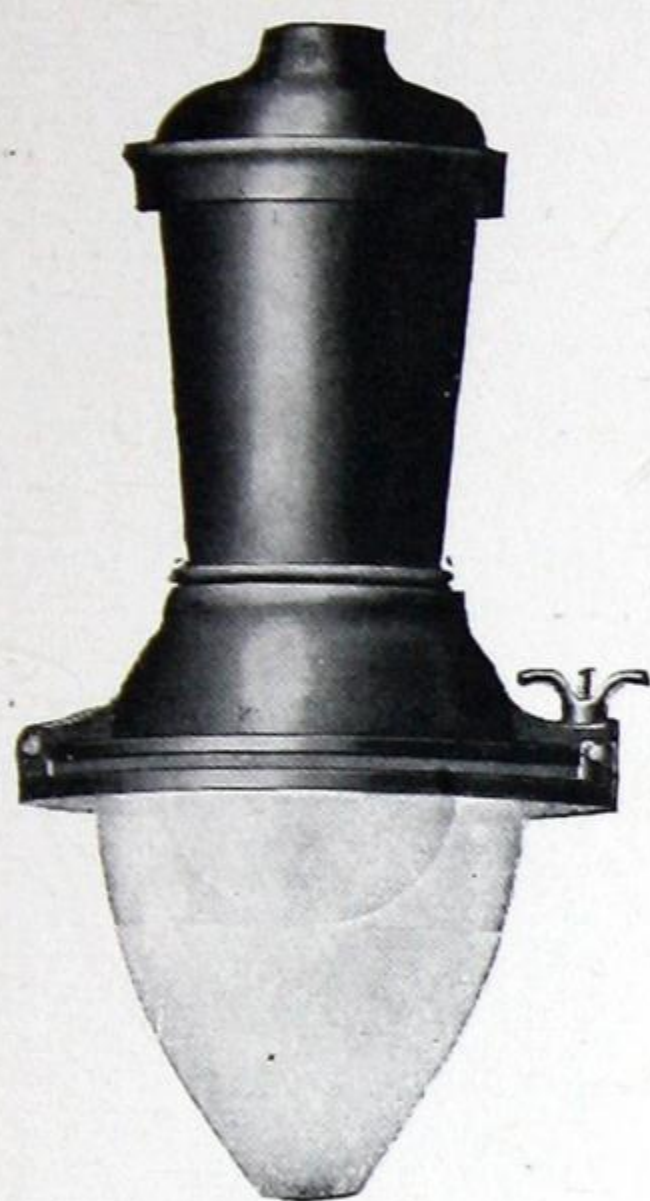
If a number of evenly spaced rows are used, as for yard lighting, the distance apart of the individual units and the rows may be increased to 176ft. for the same minimum illumination value.

With the “Primus” Lanterns suspended at a distance apart equal to $5\frac{1}{2}$ times the suspension height, the variation in illumination intensity will not exceed 10 to 1. Undue contrast will thus be avoided, a good seeing light provided, and the risk of accident eliminated.

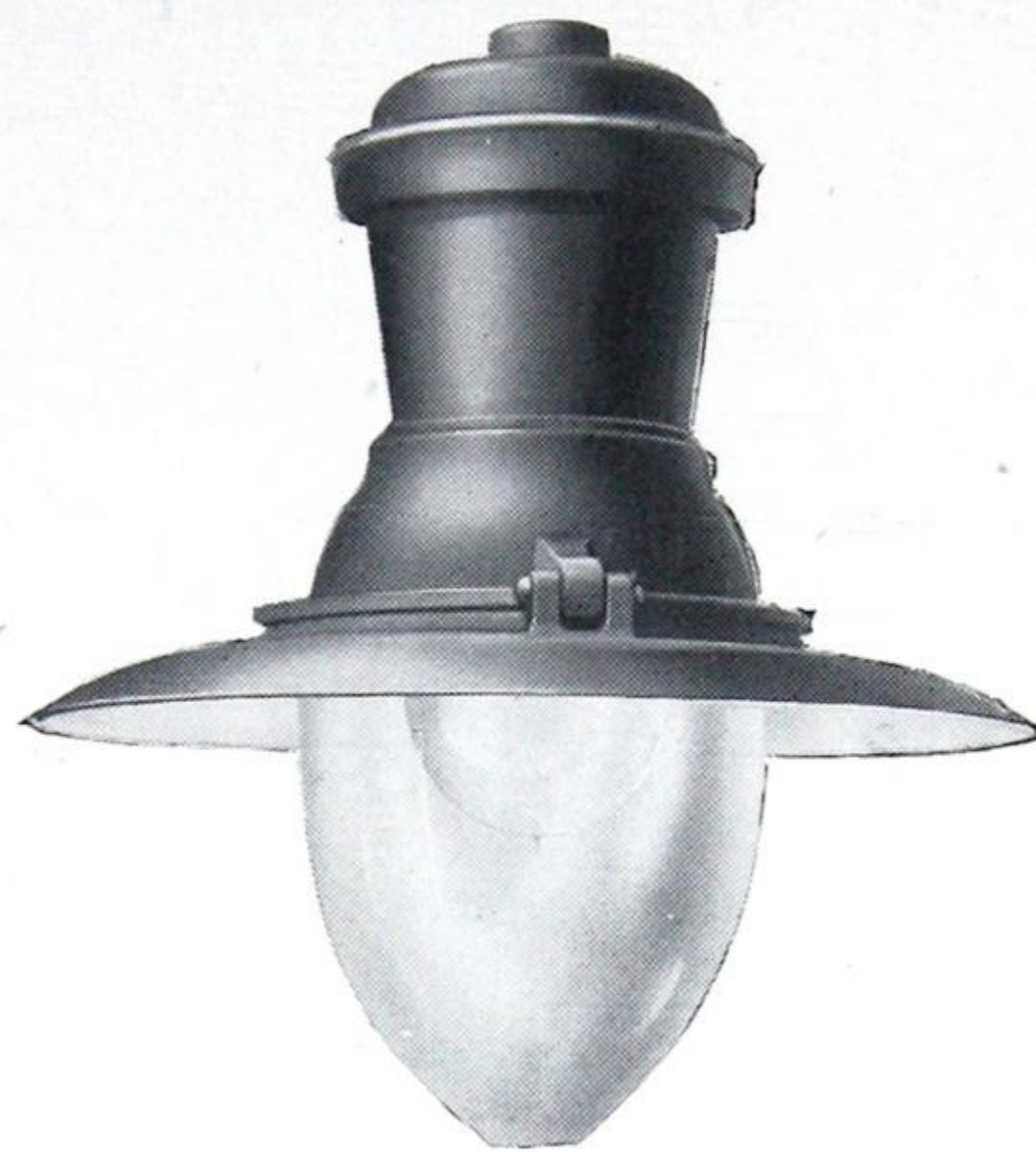
No.	Code Word		Height Overall		Gasfilled Lamp recommended		Lamp-holder included	PRICE	
	Lantern Complete	Spare Globe (clear)	Lantern	Globe				Lantern Complete	Spare Globe
			in.	in.				s. d.	s. d.
512	PUMIS	RISUM	17 $\frac{1}{4}$	6 $\frac{1}{2}$	100	W.	B.C.	45 0	5 0
512	PUMIR	RISUM	17 $\frac{1}{4}$	6 $\frac{1}{2}$	150-200	W.	E.S.	45 0	5 0
512	PURIM	RISUM	17 $\frac{1}{4}$	6 $\frac{1}{2}$	300	W.	Gol.	46 6	5 0
513	PIRIM	RISUM	15	6 $\frac{1}{2}$	100	W.	B.C.	55 0	5 0
513	PRMIM	RISUM	15	6 $\frac{1}{2}$	150-200	W.	E.S.	55 0	5 0
513	PMRIM	RISUM	17 $\frac{1}{4}$	6 $\frac{1}{2}$	300	W.	Gol.	56 6	5 0
514	PISUR	RIPUS	22 $\frac{1}{2}$	9	500-1500	W.	Gol.	93 6	18 0
514B	PISIM	—	26 $\frac{1}{2}$	—	500-1500	W.	Gol.	105 0	—

Wardle Fittings.

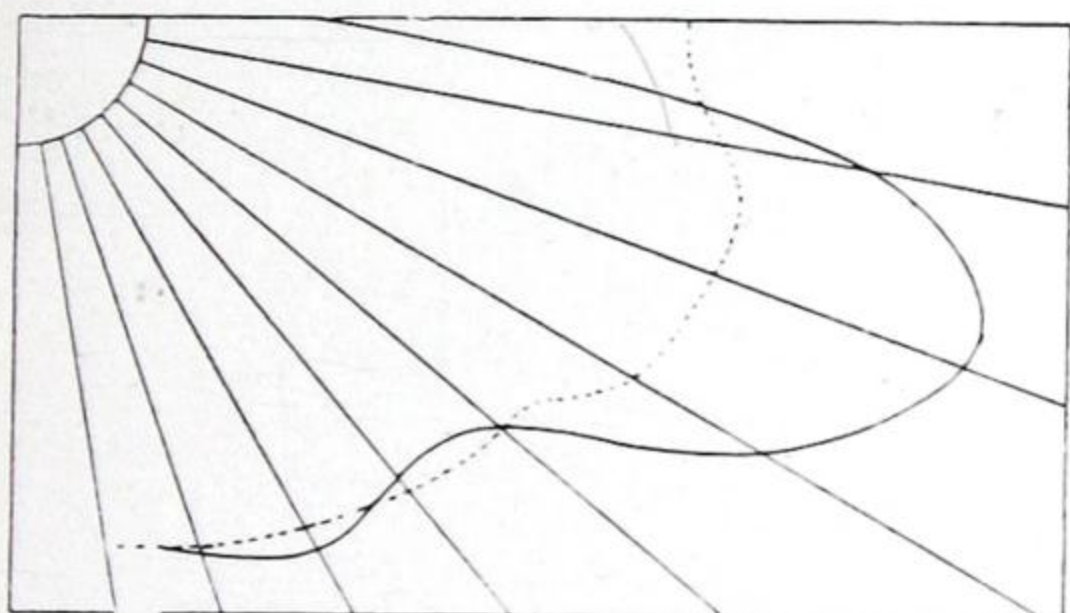
"PRIMUS" LANTERNS FOR ALL OUTSIDE LIGHTING REQUIREMENTS.



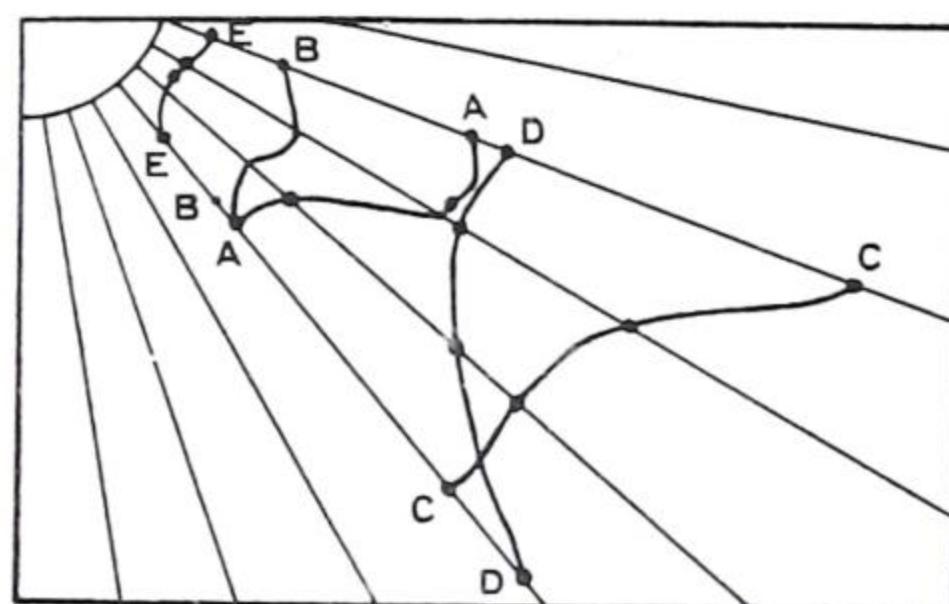
No. 512. "Primus" Lantern.



No. 513. "Primus" Lantern.

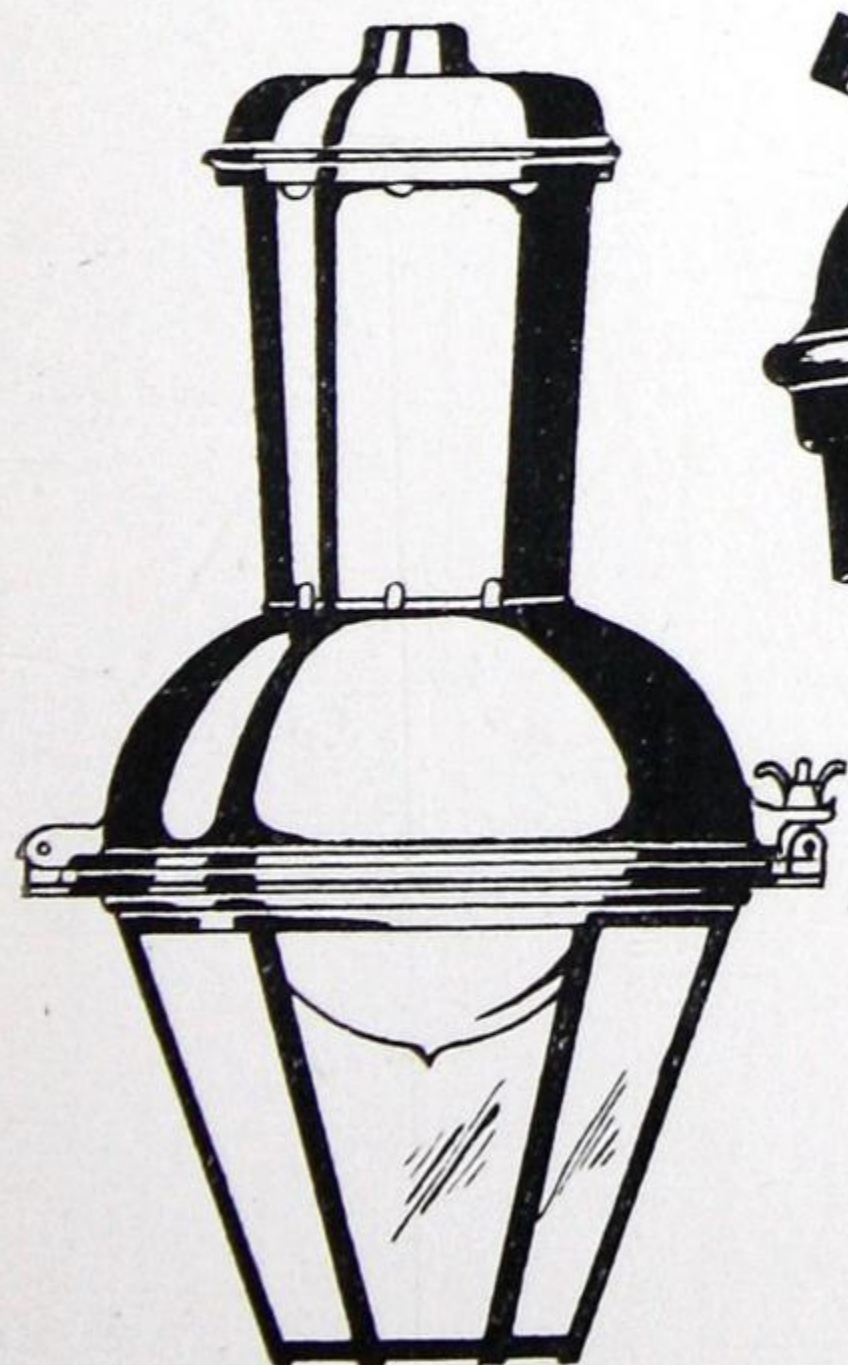


Test Room Polar Curve.

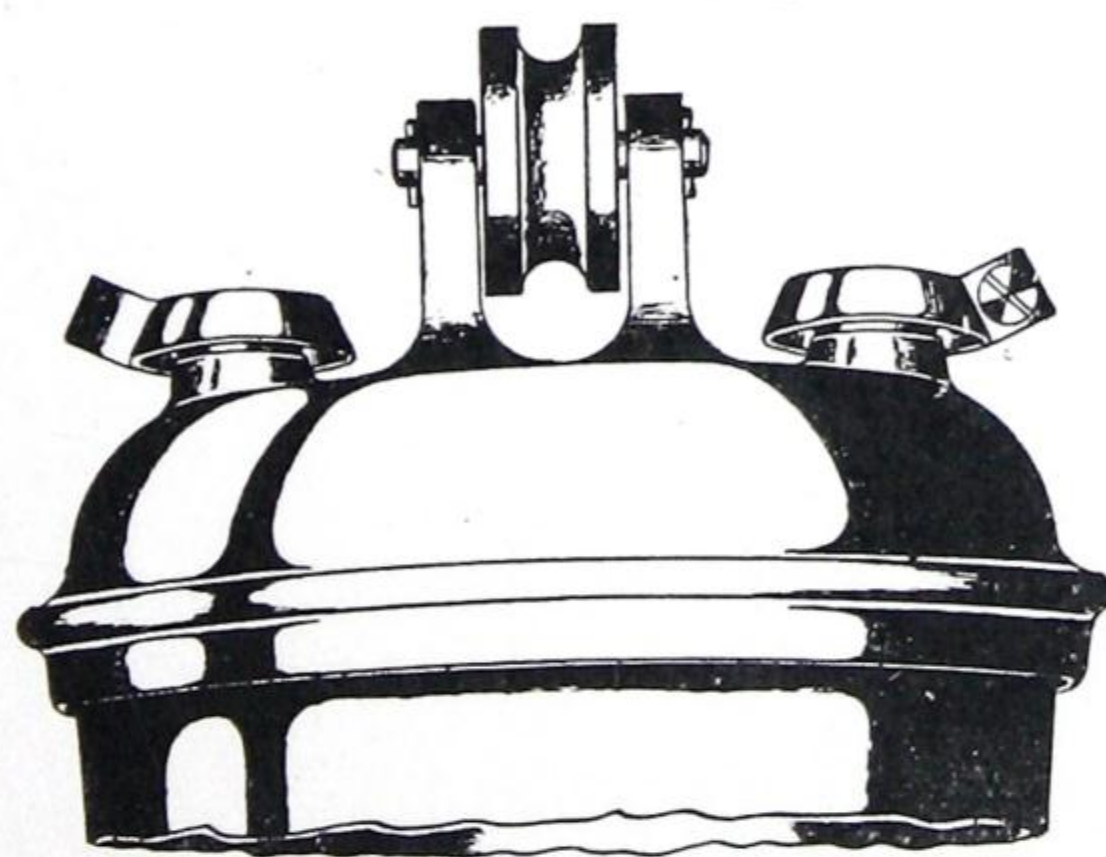


Street Polar Curve.

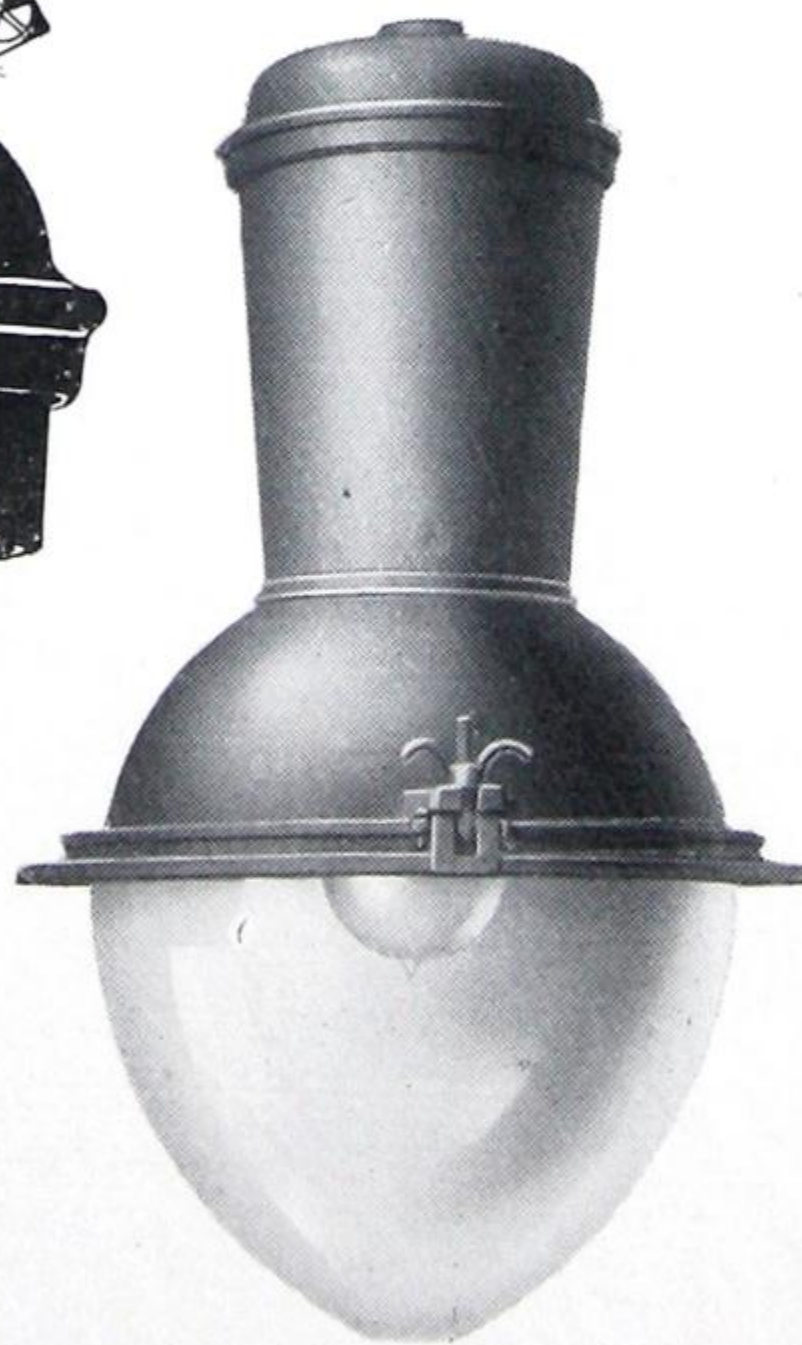
A.C. "Primus" Lantern. 300 and 500 Watt Lamps.
B.D. Much boomed competitor. 300 and 500 Watt Lamps.
E. Arc Lamp. 500 Watt Lamp.



No. 514B.
"Primus" Lantern.



"Primus" Lantern.
Outside Terminals.



No. 514.
"Primus" Lantern.

Wardle Fittings.

“ALLIANCE” LANTERNS FOR GASFILLED LAMPS.

SPECIFICATION.—Special steel spinning and reflector, vitreous enamelled green on the outside and white on the reflecting surface. The top spinning, or cowl, is readily removable. This feature facilitates packing and reduces the space occupied and the freight incurred to a minimum.

All Lanterns are supplied with a weatherproof suspender for hook attachment and with a $\frac{1}{2}$ in. gas nipple for the lampholder.

Diffusing Opaloid Globes are standard, but clear globes can be supplied without extra charge if specially ordered. Ample ventilation is provided, and the lanterns are very accessible and easy to wire and assemble.

Special attention is drawn to the fact that “Alliance” Lanterns are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface free from all chipping tendency secured.

APPLICATION.—“Alliance” Lanterns have been specially designed to meet the demand for an inexpensive lantern of simple form, and will be found eminently superior to the best of the German patterns marketed in this country.

While not to be recommended for very exposed positions or trying conditions, “Alliance” Lanterns possess many features of interest, and an exceedingly large sale testifies to their marked popularity.

“Alliance” Lanterns are suitable for both inside and outside lighting, and when equipped with the standard Opaloid Globe secure the advantages of semi-indirect lighting, in addition to those of an enclosed fitting.

Where cost is a consideration, for temporary installations, inside lighting and for all outside positions where the conditions are not too severe, “Alliance” Lanterns are unequalled.

SPACING RATIO : $1\frac{1}{2}$ —2 : 1.—For even illumination in inside lighting suspend “Alliance” Lanterns at a distance apart from one and one-half times to twice their height above the working plane.

For outside lighting space according to requirements.

No.	Code Word		Height Overall	Diameter		Gasfilled Lamp recommended	Lamp-holder included	PRICE	
	Lantern Complete	Spare Globe		Re- flector	Globe			Lantern Complete	Spare Globe
801	ENTER	LATEN	in. 14 $\frac{1}{2}$	in. 10	in. 6 $\frac{1}{2}$	100 W.	B.C.	s. d. 21 6	s. d. 4 6
802	ENTEN	LATEN	14 $\frac{1}{2}$	10	6 $\frac{1}{2}$	150-200 W.	E.S.	23 0	4 6
803	ENTEL	LETIL	18	15	9 $\frac{1}{4}$	300-500 W.	Gol.	30 0	6 0
804	ENTON	LINTO	25	20	13 $\frac{1}{2}$	1000-1500 W.	Gol.	65 0	33 0

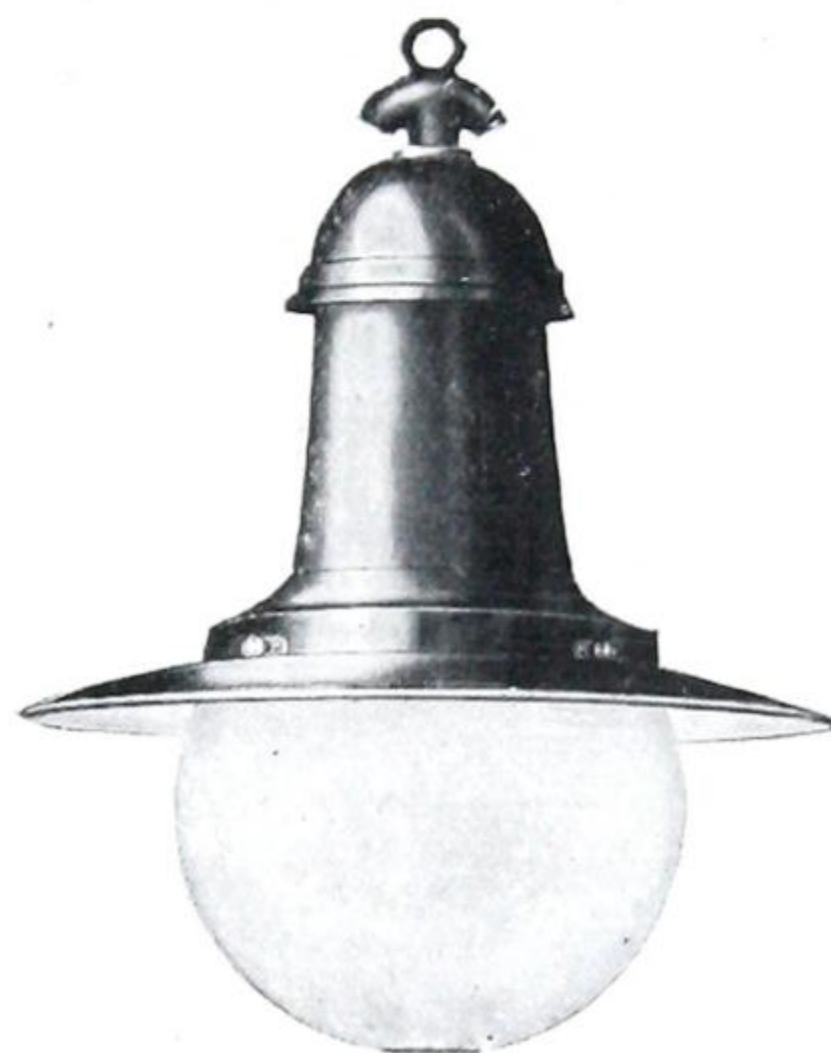
Wardle Fittings.

"ALLIANCE" LANTERNS

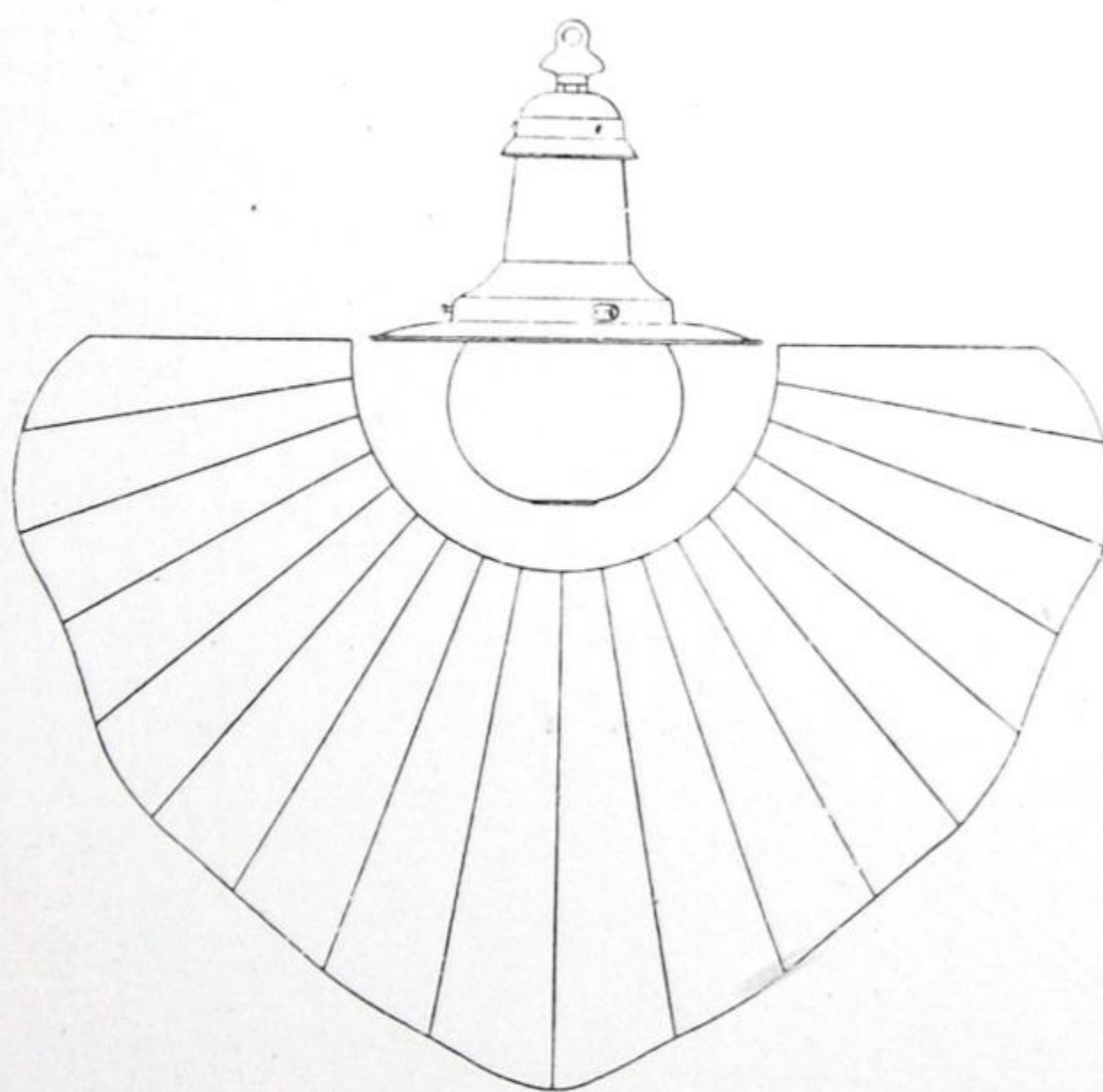
FOR GASFILLED LAMPS.



Nos. 801 & 802.
"Alliance" Lanterns



Nos. 803 & 804.
"Alliance" Lanterns.



Characteristic Polar Curve.
Result of Actual Test.

Wardle Fittings.

“ORIENT” LANTERNS

FOR GASFILLED LAMPS.

For Shops, Stores, Cinemas, Theatres and General Outside Lighting.

SPECIFICATION.—Special Steel spinnings, vitreous enamelled white on the reflecting surface and green on the outside.

The Nos. 543 and 545 are for all sizes of gasfilled lamps up to and including the 500 watt size. The No. 544 is for the larger sizes of gasfilled lamps. Both pine and squat shaped Opaloid Globes are standard.

“Orient” Lanterns can be supplied in copper or zinc and in any finish to order.

Special attention is drawn to the fact that all “Orient” Lanterns are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface free from all chipping tendency secured.

APPLICATION.—“Orient” Lanterns have been specially designed for the artistic and efficient use of gasfilled lamps, and are suitable for shop and hotel fronts, railway stations and general outside lighting. For Cinema outside lighting “Orient” Lanterns have no equal.

An attempt has been made to eliminate the “stove pipe” effect common to lamps of German origin, and it is hoped that the suggestion of the Minaret of Eastern Architecture may be the means of accomplishing this object.

SPACING RATIO.—Owing to the varied conditions under which “Orient” Lanterns are employed, no special spacing ratio can be given, but the units should be spaced according to requirements.

No.	Code Word		Height Overall	Diameter of Globe	Gasfilled Lamp recommended	Lamp-holder included	PRICE			
	Lantern Complete	Spare Globe					Lantern Complete		Spare Globe	
			in.	in.			s.	d.	s.	d.
543*	NORIE	ROTIN	27	12	200–500 W.	{ E.S.	51	9	24	9
						{ Gol.	53	3	24	9
543†	OTRIE	RENOT	24	14	200–500 W.	{ E.S.	46	9	19	9
						{ Gol.	48	3	19	9
544*	TRIEN	RENTO	32	16	1000–1500 W.	Gol.	82	6	40	0
544†	RINET	RENON	28	16	1000–1500 W.	Gol.	80	0	37	6
545	RITEN	—	30	—	200–500 W.	{ E.S.	45	9	—	—
						{ Gol.	47	3	—	—

* With Pine Globe.

† With Squat Globe.

Wardle Fittings.

"ORIENT" LANTERNS FOR GASFILLED LAMPS.

For Shops, Stores, Cinemas, Theatres, and General Outside Lighting.



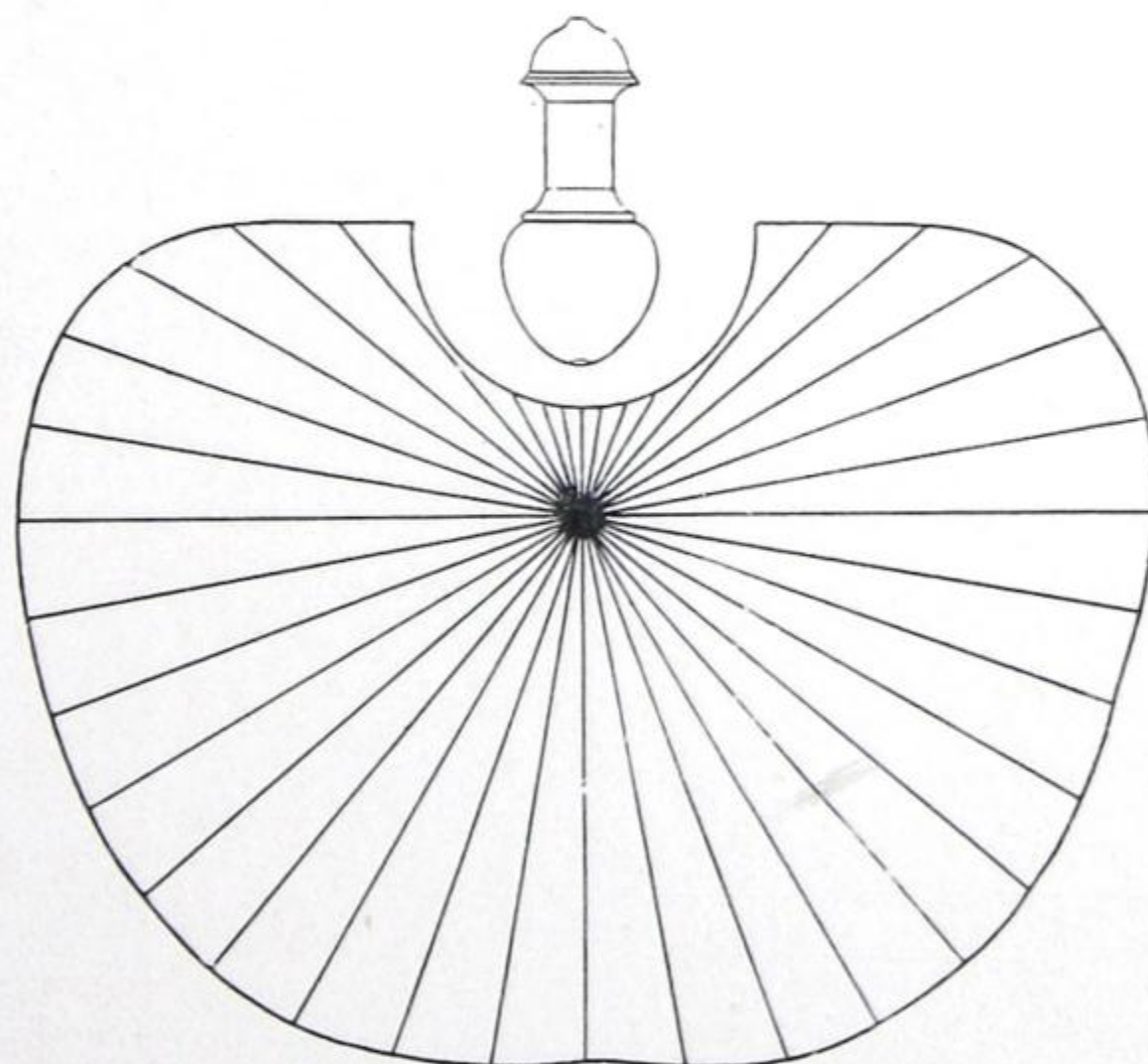
Nos. 543 & 544.
"Orient" Lanterns.
With Pine Globe.



Nos. 543 & 544. "Orient" Lantern.
With Squat Globe.



No. 545.
"Orient" Lantern.
With Metal Hood.



Characteristic Polar Curve.
Result of Actual Test.

Wardle Fittings.

“STREETLITE” LANTERNS FOR GASFILLED AND VACUUM LAMPS.

“Streetlites” were first introduced in 1908, since when they have been extensively imitated, but never equalled. “Streetlites” permit of the most effective and economic use of the gasfilled lamp in all sizes, and in addition secure the maximum results from clusters of, or single, vacuum lamps.

The lantern top is a special steel spinning, vitreous enamelled green on the outside and white on the reflecting surface, supported by a circular disc attached to a central tube. The tube takes the whole weight of the lantern and globe. The method of support is patented and forms one of the distinctive features of cluster “Streetlite” lanterns.

The method of construction makes the lanterns very accessible, facilitates erection and wiring, and, since the various parts may be readily nested, secures the minimum packing and freight charges.

When used with vacuum lamps half opal globes are supplied, securing, in combination with the disc, a most effective reflector.

For gasfilled lamps an Opaloid Globe is supplied as standard, which, while eliminating glare, does not materially detract from the sensational brilliancy so essential in attractive or so-called “White Way” street lighting.

Efficient ventilation is secured by means of an inlet hole in the bottom of the globe, holes through the disc and in the top of the bonnet beneath the cowl.

“Streetlite” Lanterns can be supplied in copper or zinc and in any finish to order.

Special attention is drawn to the fact that “Streetlite” Lanterns are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface free from all chipping tendency secured.

APPLICATION.—“Streetlite” Lanterns are in extensive use for street lighting in general. For shops, stores, arcades, etc., they have no equal. The lanterns are also popular for railway platform, car shed, and similar classes of lighting.

No.	Code Word		Height Overall	Dia- meter of Globe	Lamp recommended		Lamp- holder included	PRICE	
	Lantern Complete	Spare Globe			G.F.	V.T.		Lantern Com- plete	Spare Globe
			in.	in.				s. d.	s. d.
1	SONCO	RUI SO	12	8	—	{ 40- 60 W. }	B.C.	26 6	13 6
2	SONTI	RUI TE	16	10 $\frac{3}{4}$	—	{ 100 W. }	B.C.	32 9	18 3
3	SOPOD	{ RUI VO* RUI VA† }	18	14	—	{ 4- 60 W. }	B.C.	43 0	21 6
4	SOPHO	RUKKI*	26	15 $\frac{5}{8}$	—	{ 4- 100 W. }	B.C.	48 0	26 6
501	SONAS	RUVOR	12	8	60 W.	—	B.C.	75 0	44 6
502	SONTI	RUI TA	16	10 $\frac{3}{4}$	100 W.	—	B.C.	20 6	7 6
503	SOOTH	{ RUNDE* RUND O† }	18	14	150-500 W.	—	{ E.S. Gol. }	31 0	16 6
							{ E.S. Gol. }	41 0	19 9
							{ E.S. Gol. }	42 6	19 9
							{ E.S. Gol. }	46 0	24 9
504	SOPET	RUPER*	26	15 $\frac{5}{8}$	500-1500 W.	—	Gol.	47 6	24 9
509	SOROV	—	8 $\frac{1}{2}$	—	100 W.	—	B.C.	70 0	37 6
510	SOROS	—	11 $\frac{1}{2}$	—	150-300 W.	—	{ E.S. Gol. }	20 0	—
511	SORPE	—	14 $\frac{1}{2}$	—	500-1500 W.	—	Gol.	25 0	—
							Gol.	26 6	—
							Gol.	40 0	—

* With Squat Globe.

† With Pine Globe.

Wardle Fittings.

"STREETLITE" LANTERNS

FOR GASFILLED AND VACUUM LAMPS.



No. 3.
"Streetlite" Lantern.



Nos. 509-11.
"Streetlite" Lanterns.



Nos. 1 and 2 as shown, or
Nos. 501 and 502 with
Opaloid Globes.



Nos. 503 and 504.
"Streetlite" Lanterns.



No. 4.
"Streetlite" Lantern.

Wardle Fittings.

“BEATARK” LANTERNS FOR GASFILLED AND VACUUM LAMPS.

SPECIFICATION.—“Beatark” Lanterns, Nos. 50 and 51, are in great demand both at home and abroad, and are exceedingly popular in the illumination of large areas, streets, railways, docks, promenades, sidings, works, etc.

The lanterns comprise a spun steel reflector, vitreous enamelled white on the reflecting surface, the lampholders being accommodated above the reflector and suspended from a “Wardle” Patent Anti-Vibrator.

The weatherproof top is spun steel, vitreous enamelled green, in the standard design.

For use in exposed positions and where the atmospheric conditions are abnormal a cast iron top, tapped to requirements, is to be recommended. Both types of top are in extensive use and are affording complete satisfaction.

The No. 52 is generally similar to the above, but is intended for cluster use.

The No. 59 comprises a cast iron top and a spun steel reflector vitreous enamelled.

The simplicity, ease of cleaning, absence of moving parts, and the general accessibility of “Beatark” Lanterns are great points in their favour. When supplied with “Wardle” Brackets, Fuse Boxes, etc., an eminently practicable design of street lighting unit is secured.

“Beatark” Fittings can be supplied in copper or zinc, and with an outer globe and a patent telescopic globe lowering device for cluster lamp use if desired.

Special attention is drawn to the fact that “Beatark” Lanterns are spun and not stamped. Distortion during the enamelling process is thus entirely eliminated and a lasting enamelled surface free from all chipping tendency secured.

When fitted the globe is centrally supported. This is an important point, since shadows are thereby eliminated, which is not the case when external means of support are adopted.

The patent telescopic globe lowering device is a further advantage since it permits of ready cleaning without globe detachment, thus facilitating work at a height and preventing breakage.

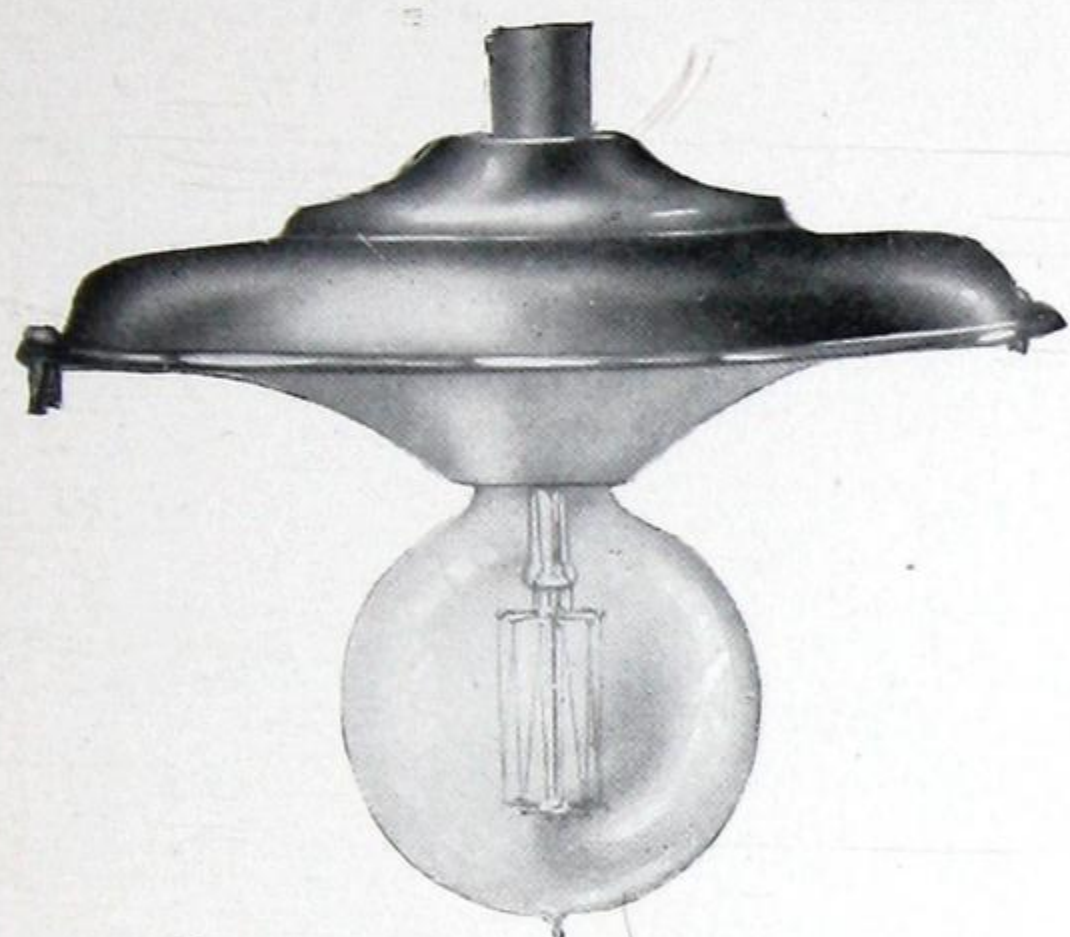
No.	Code Word		Dia- meter of Re- flector	Dia- meter of Globe	Lamp recommended	Lamp- holder supplied	PRICE			
	Fitting Complete	Spare Globe					Fitting Complete		Spare Globe	
			in.	in.			s.	d.	s.	d.
50*	SOVER	—	12	—	40-100 W.	B.C.	13	0	—	—
51	SOUHA	—	18	—	100 W.	B.C.	23	6	—	—
52	SOUPA	—	24	—	5-100 W.	B.C.	54	0	—	—
51A	SOUJE	STOKE	18	12	4-60 W.	B.C.	60	0	22	0
53	SOUPI	SOREN	24	15	4-100 W.	B.C.	95	0	42	0
59	SOUPE	—	18	—	40-100 W.	B.C.	22	0	—	—

* Extra for Cast-iron Top if required, 4/6.

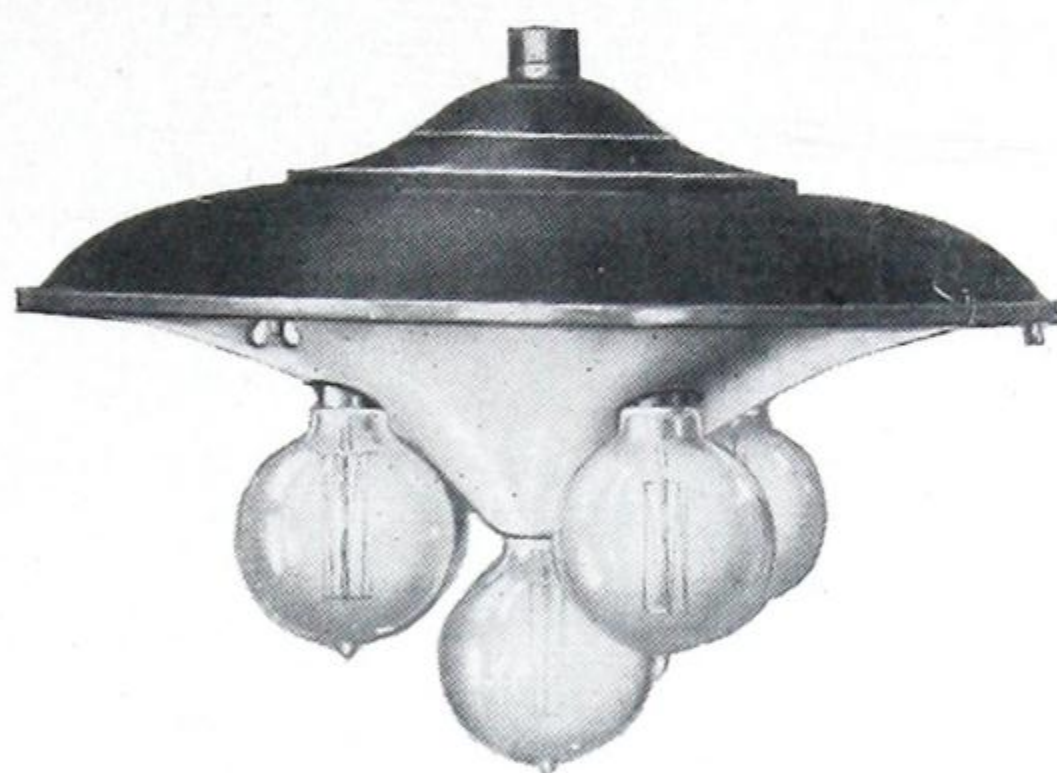
Wardle Fittings.

"BEATARK" LANTERNS

FOR GASFILLED AND VACUUM LAMPS.



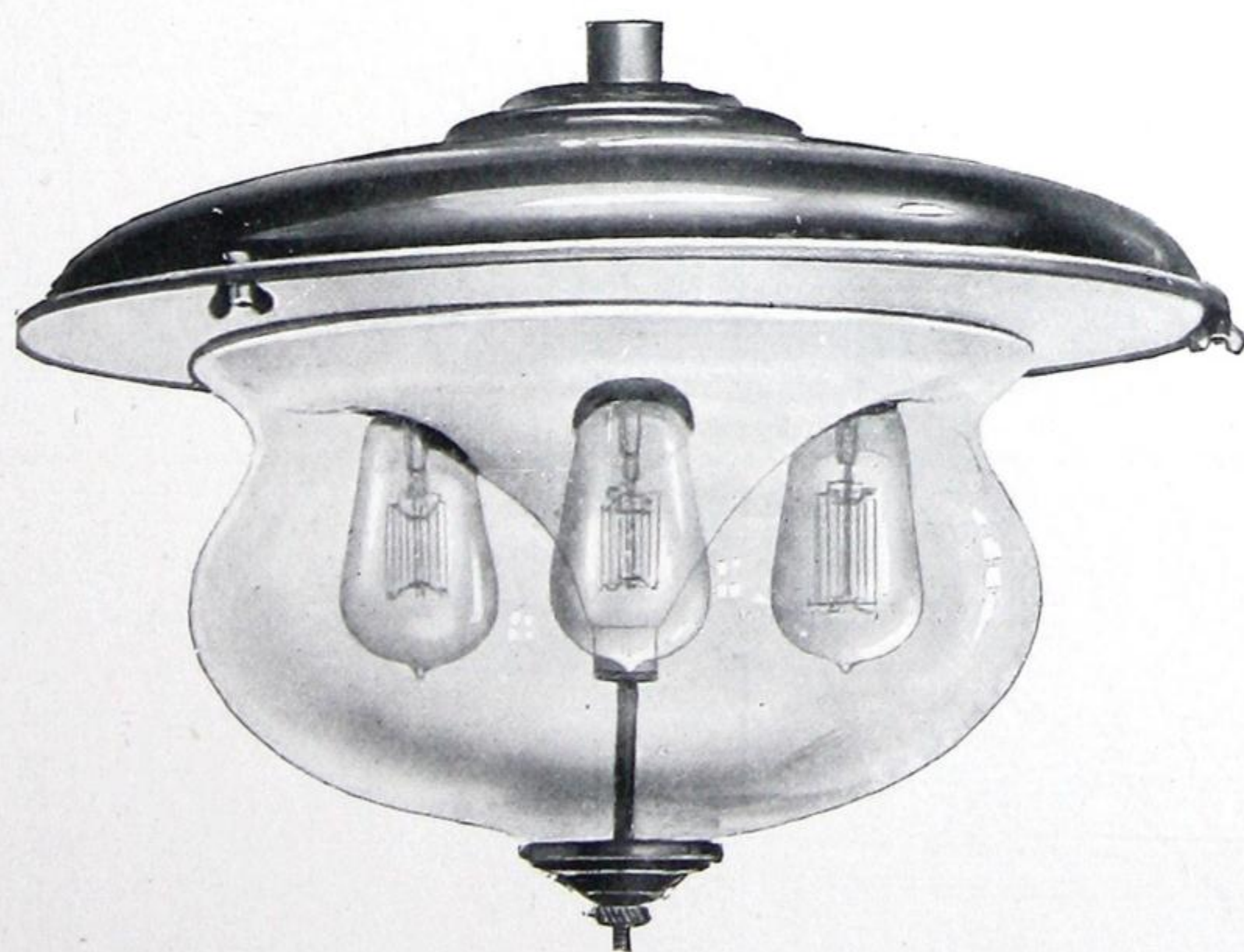
Nos. 50 and 51.
"Beatark" Lanterns.



No. 52.
"Beatark" Lantern



No. 59.
"Beatark" Lantern.



Nos. 51A and 53.
"Beatark" Lanterns.

Wardle Fittings.

"ACORN" WATERTIGHT LANTERNS

FOR GASFILLED AND VACUUM LAMPS.

SPECIFICATION.—"Acorn" Lanterns are the latest development in Watertight Cast Iron Lanterns. The designs are original and based on new principles by the application of which the majority of the objectionable features of the ordinary patterns of watertight lanterns are overcome.

It is common practice to hinge the globe of Watertight Lanterns. This method of opening scores by reason of its simplicity, but fails in that a large diameter globe is necessary to ensure lamp clearance during opening. "Acorn" Lanterns are not hinged. Two studs are screwed into the globe ring, the whole being rigidly fixed to the lugs on the top casting by means of two "Arm" nuts. To remove the globe the nuts are slackened and a half turn of the globe releases the studs from the lugs, when the globe may readily be lowered.

In the standard design a rubber ring of channel section replaces the two rubber washers usually supplied. Slipping of the rubber is therefore prevented.

Special attention is directed to the "Wardle" Patent globe ring which can be supplied at a slight extra charge if required. By its use globe breakage is reduced to a minimum and globes may be opened and cleaned with the minimum of handling and exertion.

APPLICATION.—"Acorn" Lanterns are in very extensive use in cold stores, dye houses, tanneries, wash-houses, dock sheds, engine yards, and will be found ideal for the general lighting of suburban roads, housing schemes, etc. Nos. 603 and 604 are double enclosure fittings for use in explosive atmospheres.

"Acorn" Lanterns can be supplied in vitreous or stove enamel finish, and can be galvanized if required. Standard finish is in stove enamel.

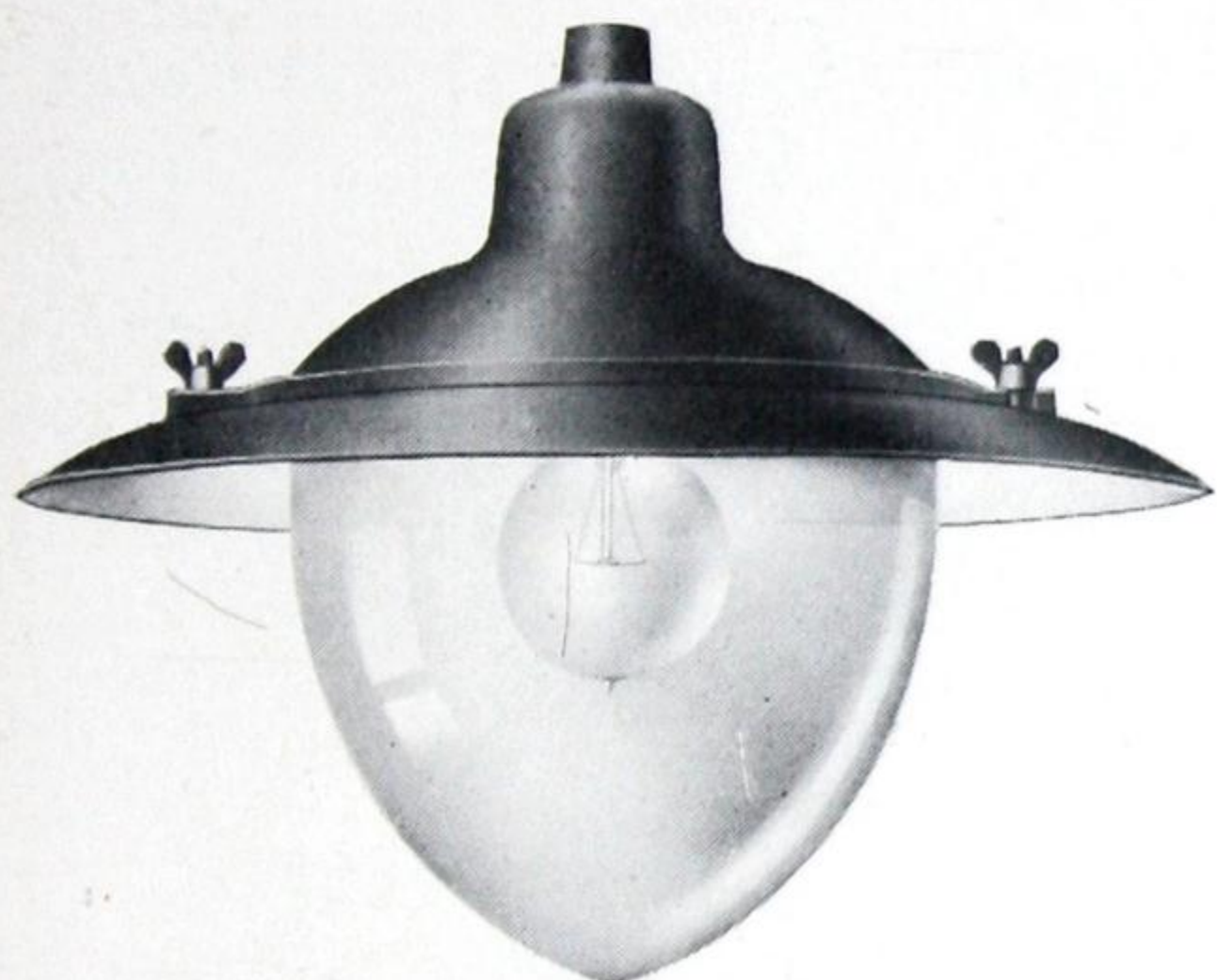
No.	Code Word		Dia- meter of Reflec- tor	Dia- meter of Globe	Lamp recommended	Lamp- holder included	PRICE			
	Lantern Complete	Spare Globe					Lantern Complete		Spare Globe	
600*	AKORN	KORNA	in.	in.			s.	d.	s.	d.
600†	AKNOR	KORNA	14	7	40-100 W.	B.C.	21	6	5	0
601	AKONA	KORNI	—	7	40-100 W.	B.C.	16	0	5	0
603	AKRON	KORNA	20	12	150-200 W.	E.S.	44	0	9	0
604	AKRNO	KORNI	14	7	40-60 W.	B.C.	30	0	5	0
			20	12	100 W.	B.C.	60	0	9	0

* With Reflector. † Without Reflector.

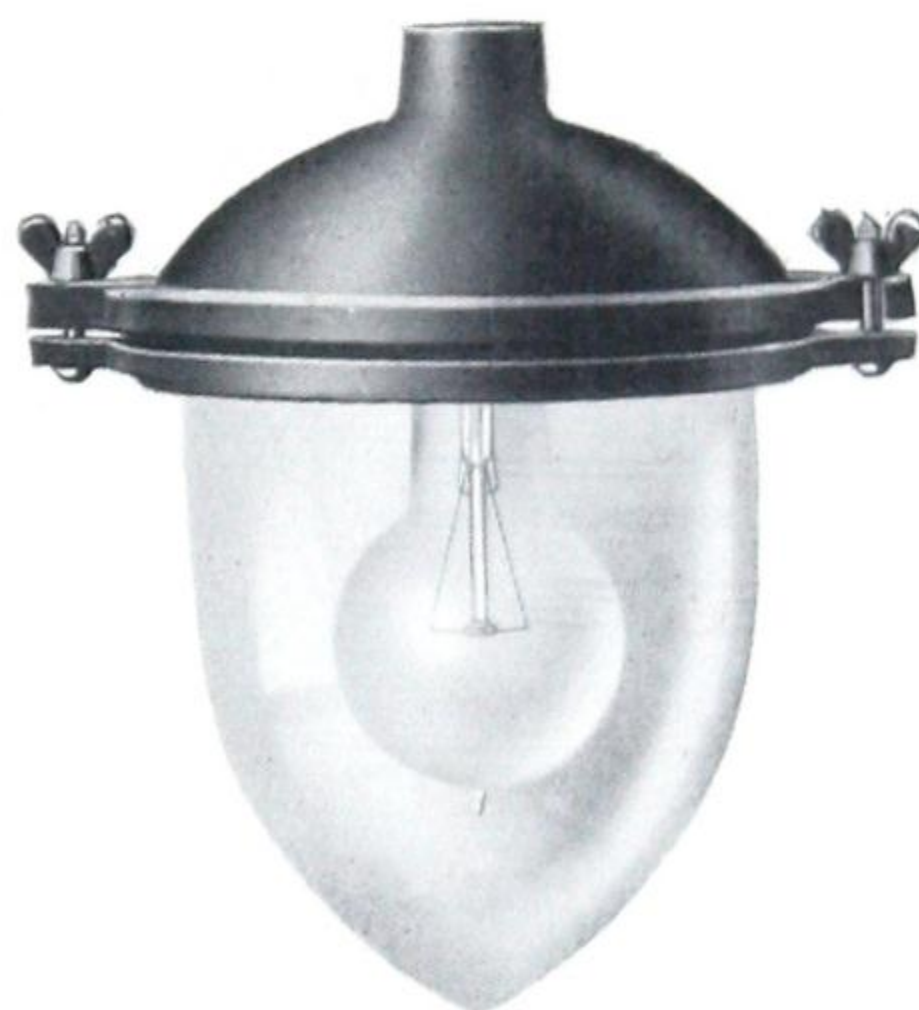
Wardle Fittings.

"ACORN" WATERTIGHT LANTERNS

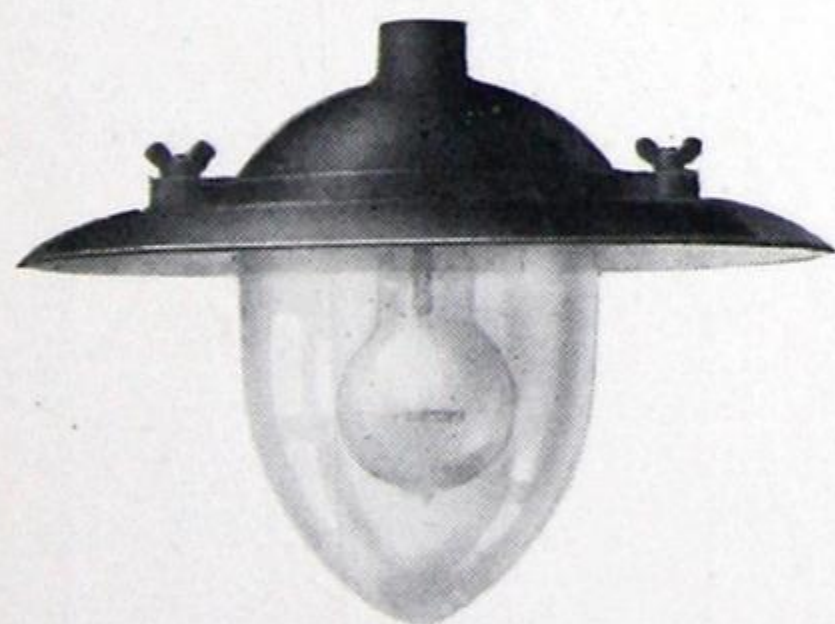
FOR GASFILLED AND VACUUM LAMPS.



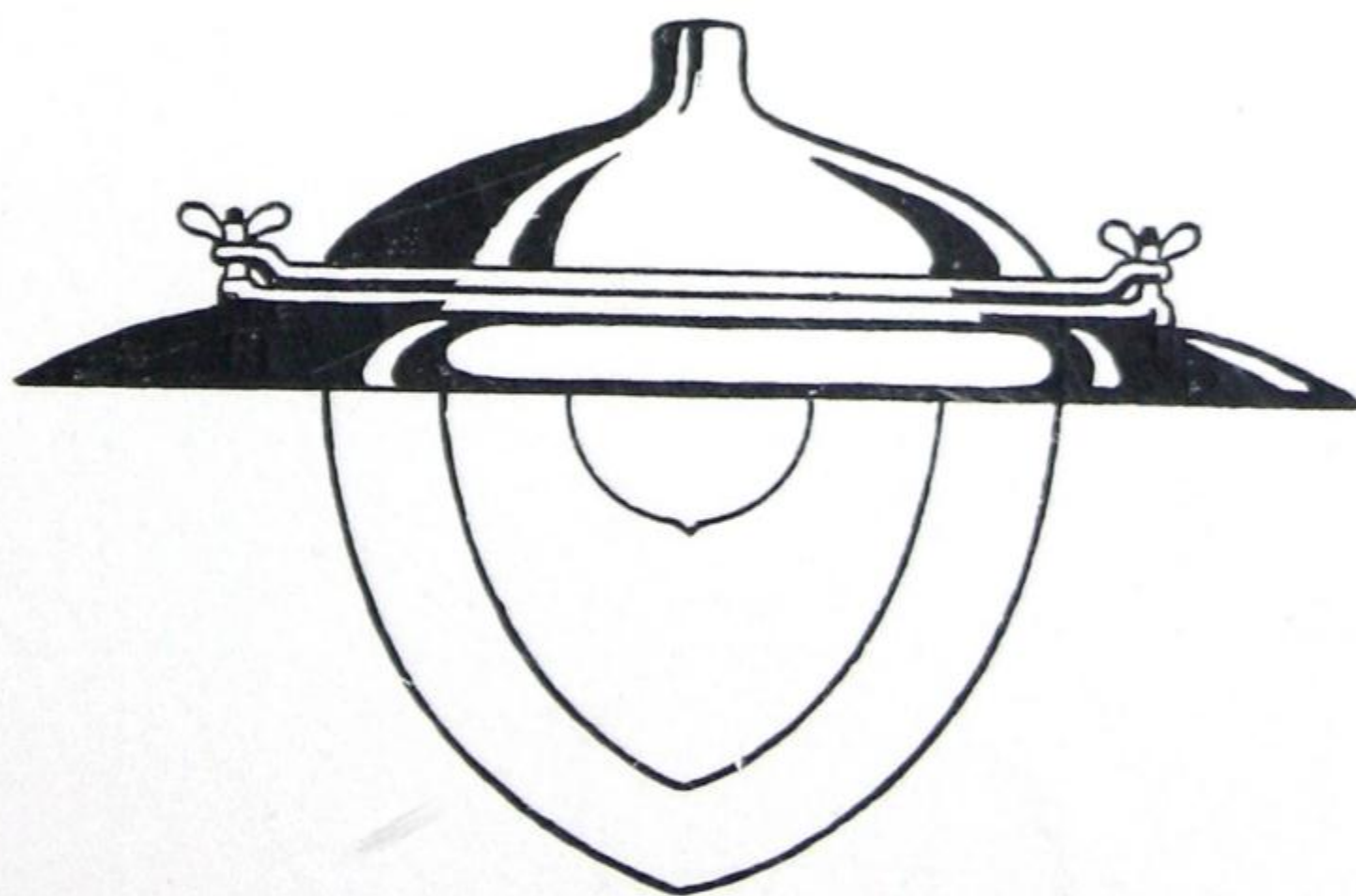
No. 601. "Acorn" Lantern.



No. 600. "Acorn" Lantern.
Without Outside Reflector.



No. 600. "Acorn" Lantern.
With Outside Reflector.



Nos. 603 & 604. Double Enclosure Fittings.

Wardle Fittings.

MULTIPLE LIGHT STREET REFLECTORS.

SPECIFICATION.—"Wardle" Multiple Light Street Reflectors have been specially designed to meet the demand for outside fittings incorporating 2, 3, or 4 of the smaller sizes of gasfilled or vacuum lamps. The fittings comprise a special steel spinning coated with the finest vitreous enamel, green outside and white on the reflecting surface.

In the No. 438 the method of support is by means of a cast cowl and saddle.

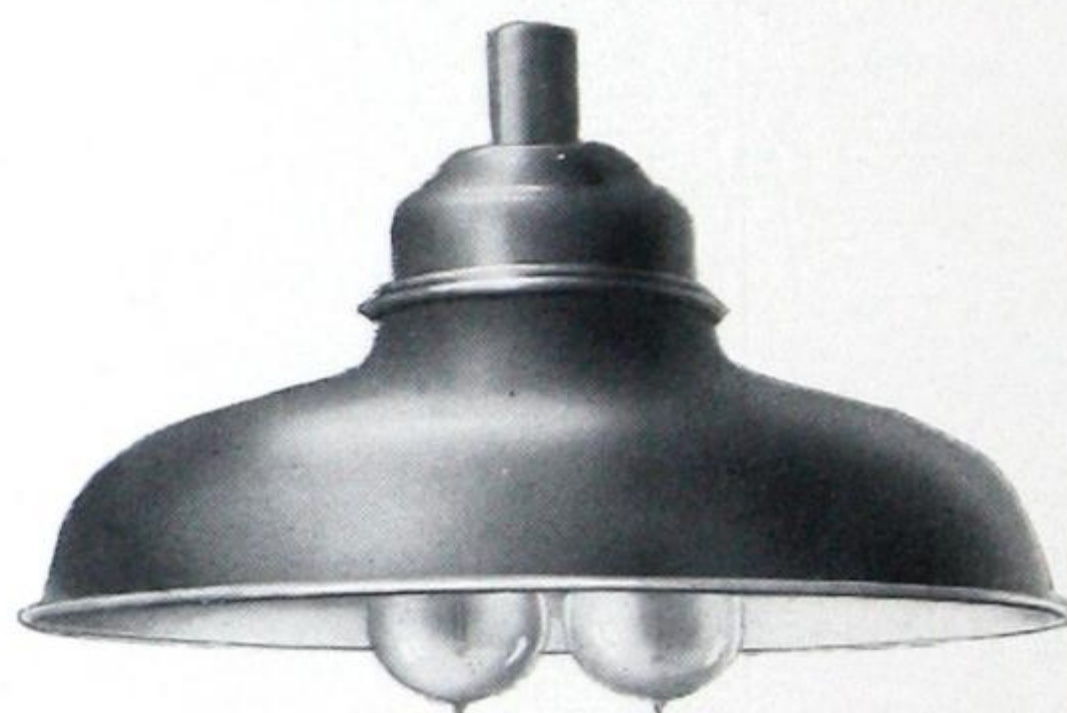
The Nos. 439, 448 and 449 are two-piece spinnings arranged for coupling support.

The lampholders are attached to a vitreous enamelled plate and anti-vibrators can be supplied if required.

APPLICATION.—Multiple Light Reflectors are to be specially recommended for suburban street lighting and all outside positions where the larger sizes of gasfilled lamps are not required.



Nos. 438 and 439.



Nos. 448 and 449.

No.	Code Word	Height over all	Diameter of Reflector	Lamps recommended.	Lamp- holders included	Price
438	MULTI	in. 9	in. 18	2 100 W	B.C.	25/-
	MULIT	9	18	3 100 W	B.C.	26/-
	MUTIL	9	18	4 100 W	B.C.	27/-
439	MILUT	7½	15	2 40-60 W	B.C.	17/6
	MITUL	7½	15	3 40-60 W	B.C.	18/9
	MIUTL	7½	15	4 40-60 W	B.C.	19/9
448	TIMUL	9½	16	2 100 W	B.C.	24/3
	TIMLU	9½	16	3 100 W	B.C.	25/6
	TULIM	9½	16	4 100 W	B.C.	26/6
449	LIMUT	7½	14	2 40-60 W	B.C.	18/-
	LITUM	7½	14	3 40-60 W	B.C.	19/3
	LIUTM	7½	14	4 40-60 W	B.C.	20/3

Wardle Fittings.

CAST IRON LANTERN WITH HOLOPHANE GLOBE.

SPECIFICATION.—The No. 518 “Wardle” Lantern has been specially designed for use with the Holophane Refractor Globe, and the 100-300 watt sizes of gasfilled lamps. The lantern comprises a cast iron top, terne plate sleeve, and cast iron reflector and globe supporting ring. An outside focussing device is fitted and ample ventilation is provided.



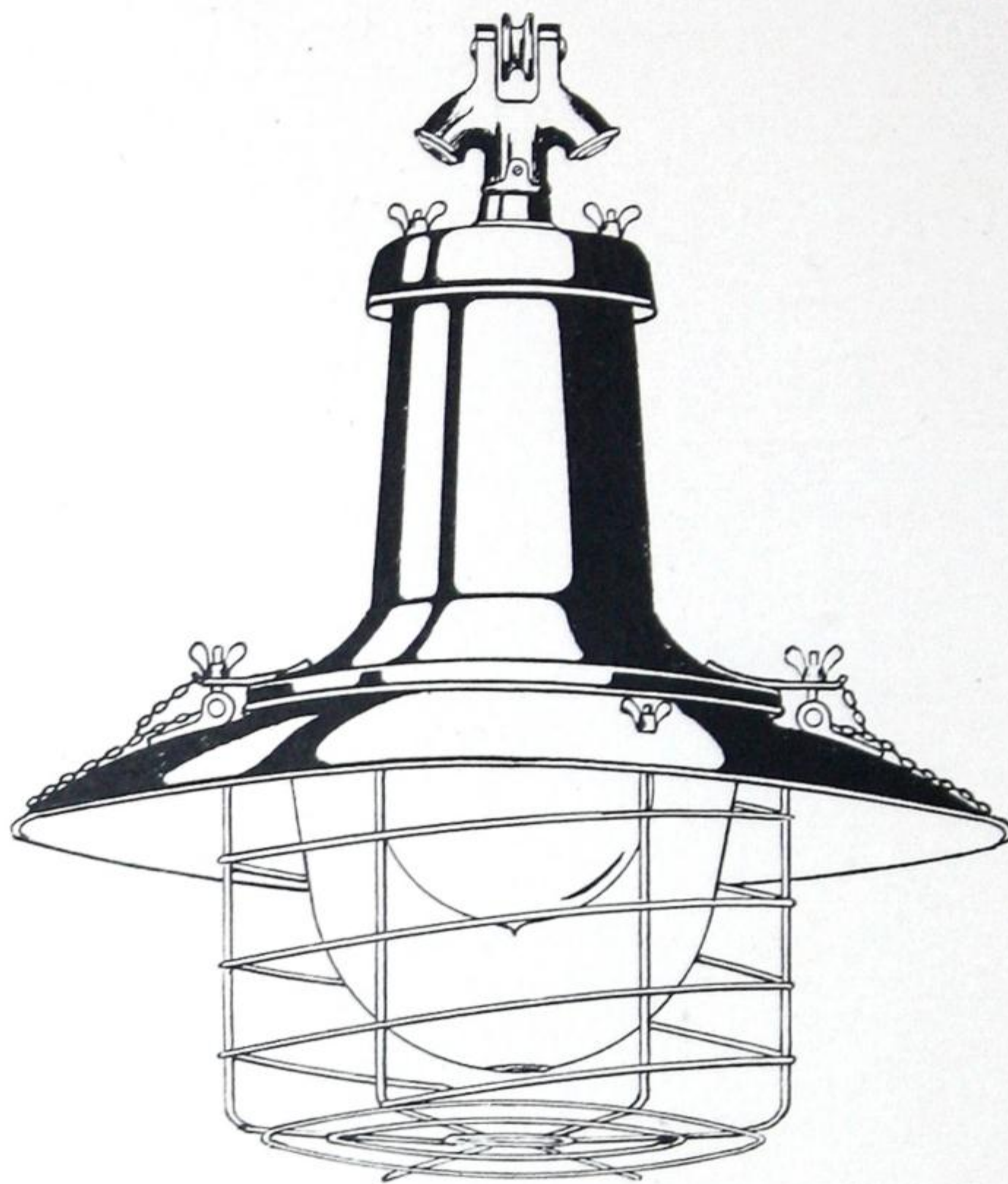
No. 518.

Prices and detailed prints on application.

Wardle Fittings.

WEATHERPROOF COPPER LANTERN

FOR GASFILLED LAMPS.



"Ship" Lantern.

SPECIFICATION.—The Lantern, Reflector and Sleeve are heavy copper spinnings finished in best quality stove enamel, green on the outside and white on the reflecting surface. The cowl is of cast-iron and is attached to a cast-iron ring spun into the copper sleeve. Suspension is secured by means of a weatherproof insulated suspender provided with bushed holes.

The Flint Glass Globe is secured by a stout rubber channel ring, and with the reflector may readily be lowered during cleaning or lamp renewals.

The Galvanized Wire Guard is built to withstand the roughest usage.

APPLICATION.—The "Ship" is a specially designed lantern for use on board ship, for docks, canals, sidings, loading sheds, and all places where a substantial copper lantern of this nature is in demand. The lantern is standard with the leading shipping companies, and has proved of great service during loading and unloading, coaling and similar operations. A large number of "Ship" Lanterns are also in use in engine rooms.

For overseas work and permanent or temporary lighting in connection with shipping, the "Ship" Lantern is to be strongly recommended in place of the old-fashioned Cargo Cluster.

Lantern	Height overall	Diameter of Reflector	Weight complete	Lamp-holder included	Gasfilled Lamp Recommended	PRICE	
						Lantern complete	Spare Globe
"Ship"	20½ in.	18 in.	11¼ lbs.	Gol.	300-500 W.	78/9	10/6

Wardle Fittings.

STREET LIGHTING SECTION.

“Wardle” Street Lighting is now an exact science. With the advent of the gasfilled lamp a complete range of Lanterns and Brackets was designed to meet every possible condition: “Primus” Lanterns are world renowned. In practically every principal town the Nos. 514, 513 and 512 will be found performing excellent and lasting service.

For suburban street lighting Wardle Brackets, “Acorn,” “Beatak” and “Streetlite” Lanterns are in demand.

For tramway routes the “Wardle” Barrow Suspension System has been tersely described by a leading city engineer as the common-sense method of street lighting.

For docks, sidings, railways, coal and iron fields and similar outside areas one or other of the many Wardle designs will be found equal to all demands.

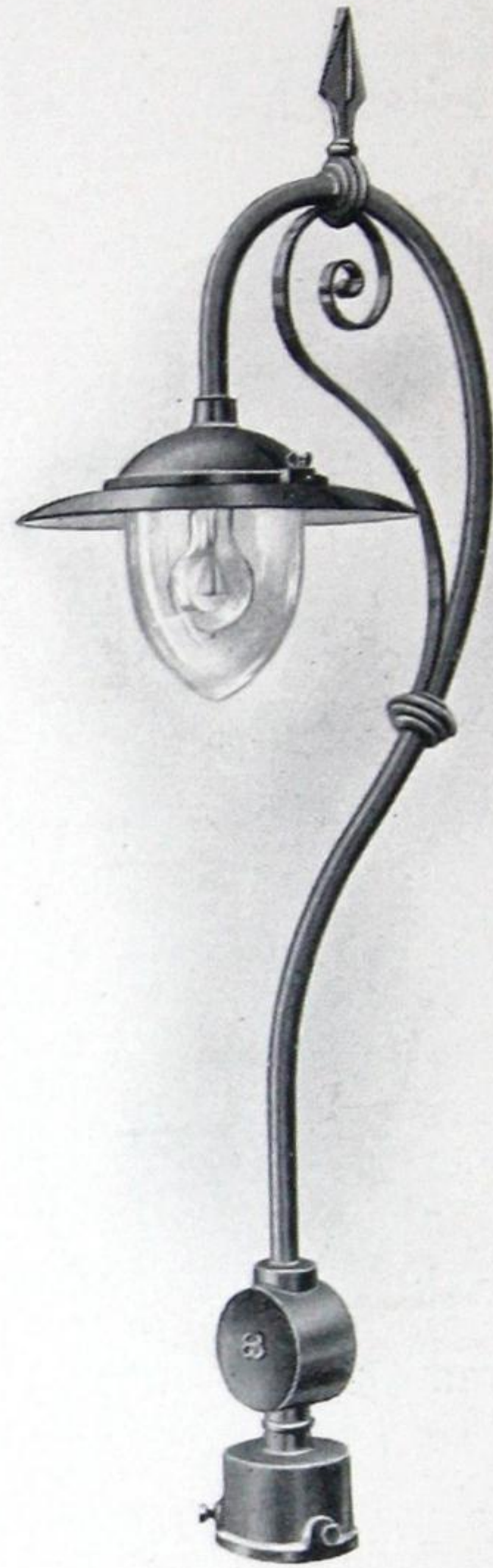
The illustrations afforded are typical but it would clearly be impossible to list the whole of the many designs that have found approval. Detailed prints and full particulars will gladly be forwarded on application, or special designs will be submitted on receipt of particulars of the conditions to be fulfilled.

Special attention is drawn to the fact that the whole of the street lighting equipment supplied is actually manufactured at the “Wardle” factory. Engineers can therefore rest assured that every item in connection with their order will receive the personal supervision of the manufacturers.

Wardle Fittings.

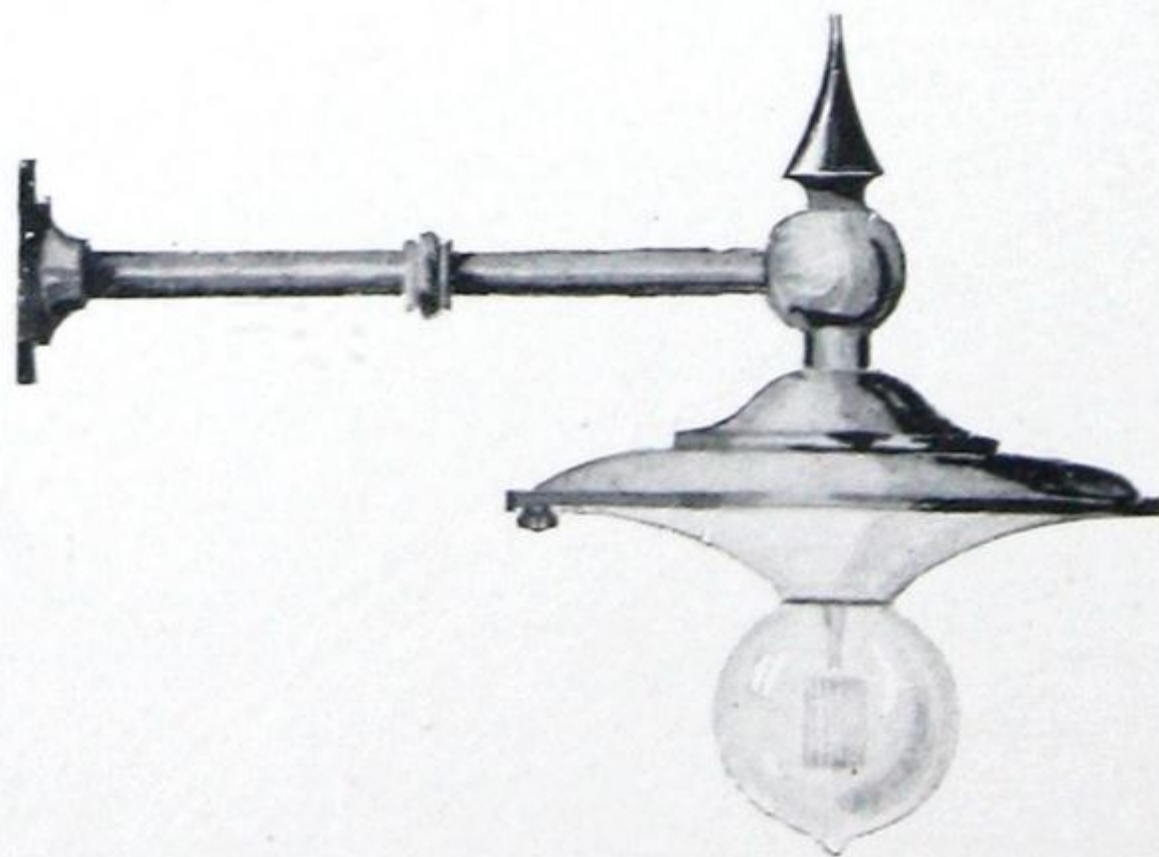


DETAILED PRINTS
AND PRICES
ON APPLICATION.



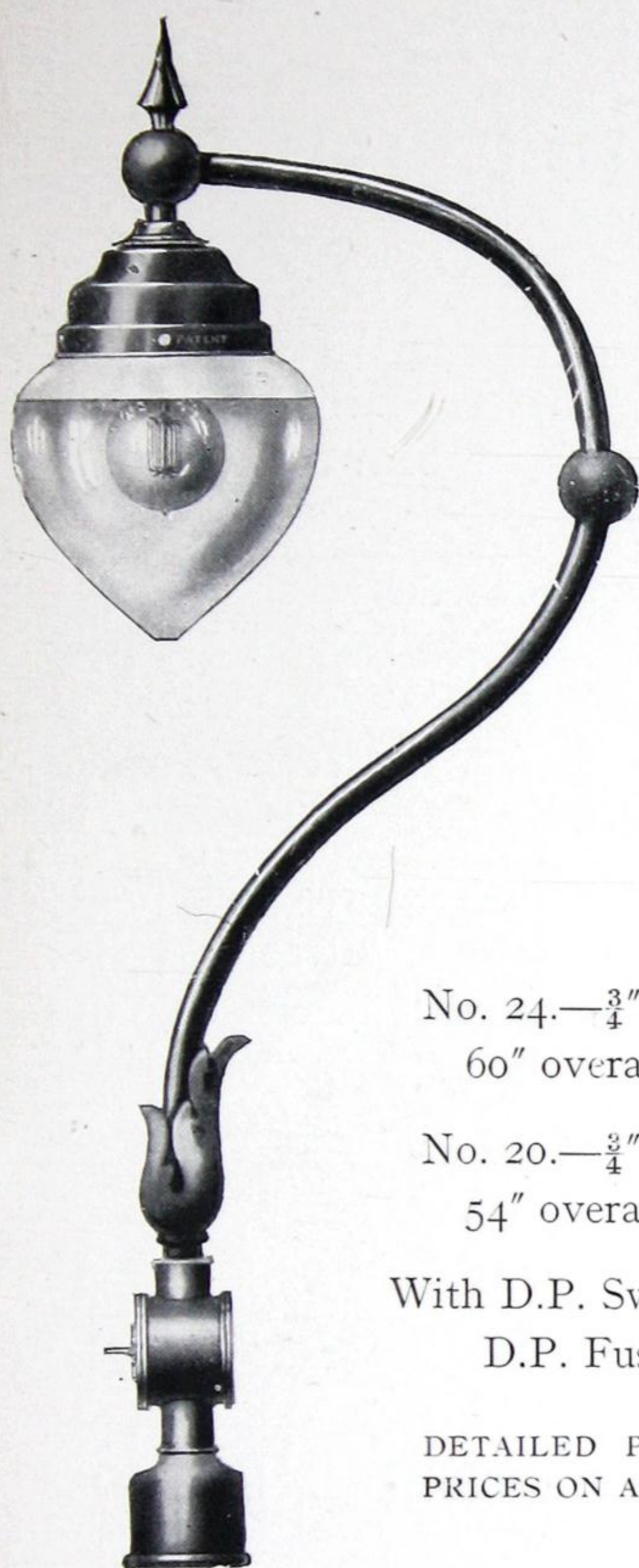
No. 21.
 $\frac{1}{2}$ " Gas Tube, Projection 18",
Drop 24"

No. 2000.
 $\frac{3}{4}$ " Gas Tube, 45" overall height.



No. 27.— $\frac{3}{4}$ " Gas Tube, 18" Projection. No. 28.— $\frac{3}{4}$ " Gas Tube, 24" Projection.

Wardle Fittings.



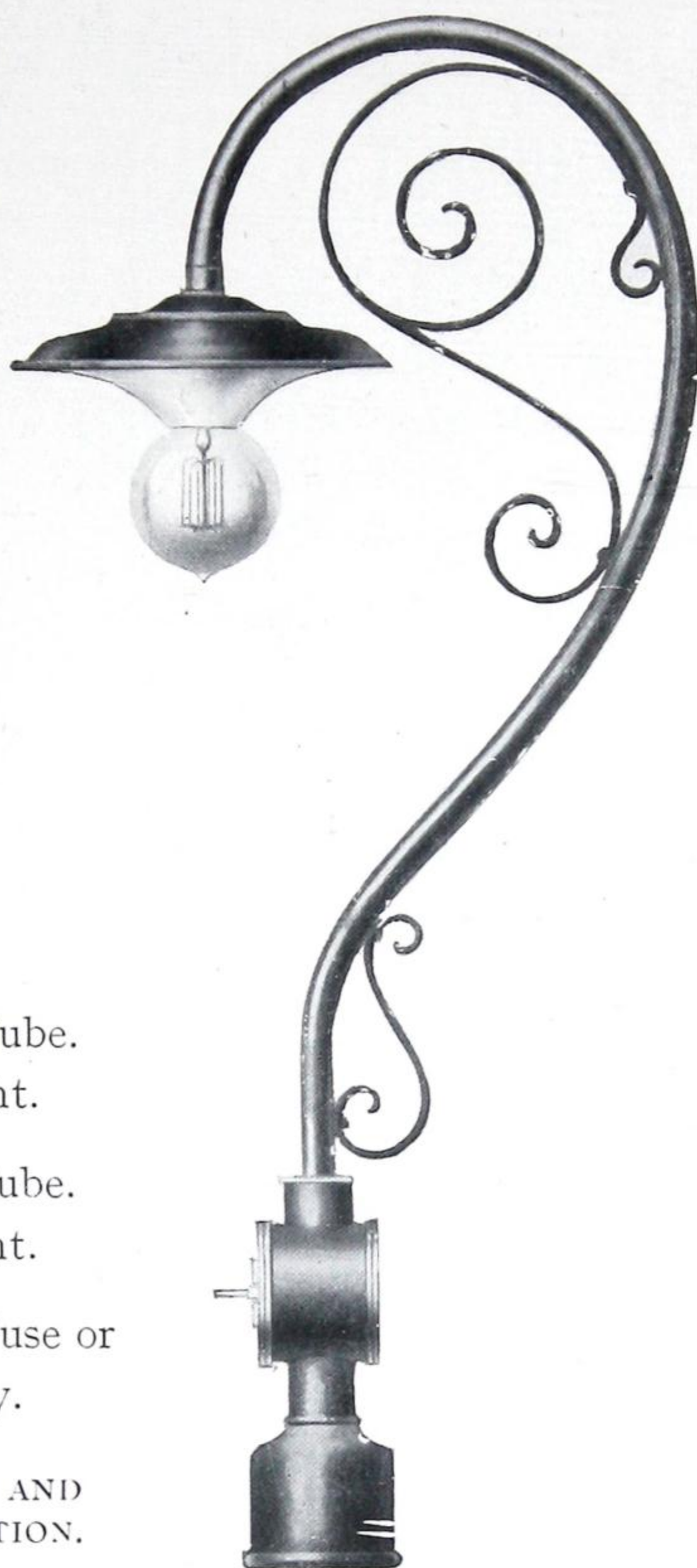
No. 24.

No. 24.— $\frac{3}{4}$ " Gas Tube.
60" overall height.

No. 20.— $\frac{3}{4}$ " Gas Tube.
54" overall height.

With D.P. Switch Fuse or
D.P. Fuses only.

DETAILED PRINTS AND
PRICES ON APPLICATION.



No. 20.



No. 16.— $\frac{3}{4}$ " Gas Tube, 24" Projection. No. 17.— $\frac{1}{2}$ " Gas Tube, 18" Projection.

Wardle Fittings.

CAST IRON WATERTIGHT FITTINGS.

WARDLE Cast Iron Watertight Fittings have recently been redesigned, and the present series presents certain novel features. The inherent defects of the designs to be met with in practice have been eliminated, but by bulk production the prices have been maintained at strictly competitive figures.

Swing bolts, a most objectionable feature of the usual well glass fitting, have been dispensed with. A well designed bayonet fastening ensures a perfectly watertight construction and the simplest means of globe removal possible. A ring of channel section replaces the rubber washers, thus eliminating slipping during assembly.

SPECIFICATION.—All Well Glass Fittings are stove enamelled white inside and green outside as standard. Other finishes, galvanizing, etc., to order. The standard tapping is either $\frac{1}{2}$ in. gas or $\frac{3}{4}$ in. conduit, or to order.

All Fittings are complete with either $\frac{1}{2}$ in. gas or $\frac{5}{8}$ in. brass lampholder nipples.

The Standard Well Glass is $3\frac{3}{4}$ in. lip and $7\frac{1}{4}$ in. deep.

The cast iron Backplate is 4 in. diameter.

The Reflector diameter is $7\frac{1}{4}$ in.

In Nos. 300C and 301C the bracket projection is 5 in. and the drop $4\frac{1}{2}$ in.

In Nos. 300B and 301B the bracket drop is 9 in.

In Nos. 300D and 301D the bracket projection is 12 in.

Prices include Well Glasses but not lamps or lampholders.

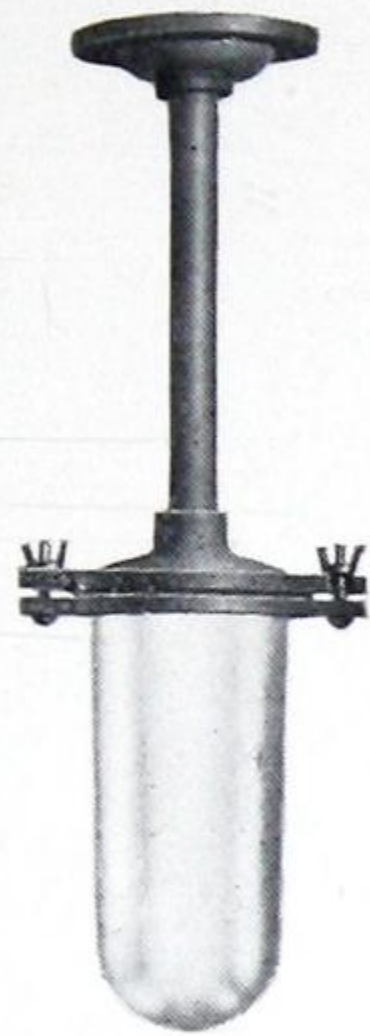
No.	Code Word	Lamp recommended	PRICES		Extra for Galvanized Guard	
			1-11	12 or over	1-11	12 or over
300	WATER	40-60 W.	s. d.	s. d.	s. d.	s. d.
300A	WARET		3 8	3 3		
300B	WERAT		4 11	4 6		
300C	TAREW		6 0	5 7		
300D	TARWE		6 4	5 11		
301	RATEW		8 4	7 11	1 6	1 4
301A	RATWE		4 8	4 3		
301B	RAWET		5 11	5 6		
301C	WARTE		7 0	6 7		
301D	ETWAR		7 4	6 11		
			9 4	8 11		

Wardle Fittings.

CAST IRON WATERTIGHT FITTINGS.



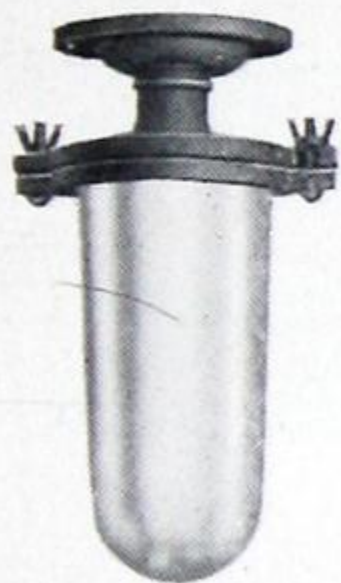
No. 300



No. 300B



No. 301.



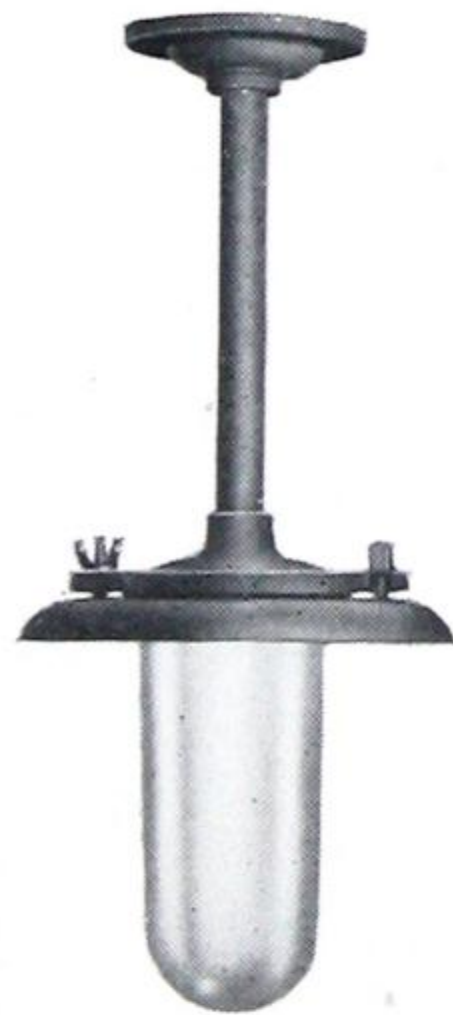
No. 300A



No. 301A



No. 301C



No. 301B



No. 300C



No. 300D



Wire Guard.
Galvanized.



No. 301D

Wardle Fittings.

WILKINSON PATENT

BULKHEAD FITTINGS.

Patent Nos. 113698 and 117538.

SPECIFICATION.—Light cast iron body and lid, stove enamelled white inside, green outside ; vitreous enamelled or galvanized finishes to order. Best quality flint glass, puttied and clipped in position. Wire guard supplied if required.

Holders (either one or two) are fixed by the shade ring in a plate sliding in the grooved sides of the case.

Holders and plate can be removed for wiring, and the position of the plate varied to centralize the filament in the reflector.

There are no small nipples, ample space is provided for slack wire and looping-in may readily be effected.

Hinges and small screws have been eliminated while the lid may be removed by merely slackening, but without removing the wing nuts.

Three-point fixing ensures a tight joint between the lid and the body.

Two fixing screw holes only are required, both in the centre line, reducing wall plugging and simplifying fixing on a narrow pillar.

Wilkinson Patent Bulkhead Fittings can be wired and fixed in one half the time required for the antiquated type, are of superior efficiency and lasting quality and an enormous advance on all previous Fittings.

APPLICATION.—For use in chemical works, mines, ships, cold stores, and in all situations where the old-fashioned "Oyster" Fitting has been and is in use.

No. 610 is designed for one vacuum lamp only of 60 Watts or smaller size.

No. 612 is suitable for either one or two 40-60 Watt lamps.

The entrance hole is tapped for $\frac{3}{4}$ in. conduit ; other sizes to order.

Two entrance holes can be made at the sides at a slight extra charge if required.

Stocked in painted finish. Galvanised or vitreous enamelled finishes to order.

No. 614 has been specially designed for projecting the light through the windows of chemical works, etc.

No.	Code Word	Overall Length	Diameter	Depth	PRICE EACH, including Lampholder		Wire Guard		Spare Glass	
		in.	in.	in.	s.	d.	s.	d.	s.	d.
610	INATE ANEVI ENITA	10 $\frac{3}{4}$	6 $\frac{3}{4}$	3 $\frac{3}{4}$	18	6	1	3	3	6
612		12	8 $\frac{5}{8}$	5 $\frac{1}{8}$	25	6	1	3	3	6
614		11 $\frac{3}{4}$	8 $\frac{5}{8}$	4	23	9	1	3	1	6

Wardle Fittings.

WILKINSON PATENT BULKHEAD FITTINGS.

Patent Nos. 113698 and 117538.



No. 610.
Closed.



No. 610
Showing method of opening.



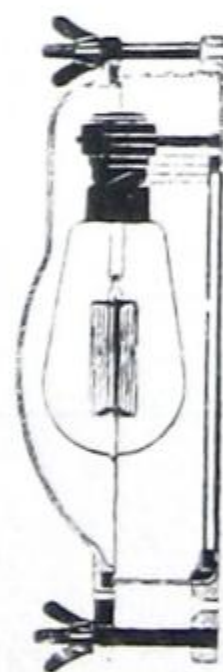
No. 612.
Showing method of opening.



No. 612.
Closed.



No. 614.
In perspective.



No. 614.
In section.

Wardle Fittings.

ACCESSORIES.



No. 35.

SUSPENSION
DISCONNECTING BOX

10/- each.



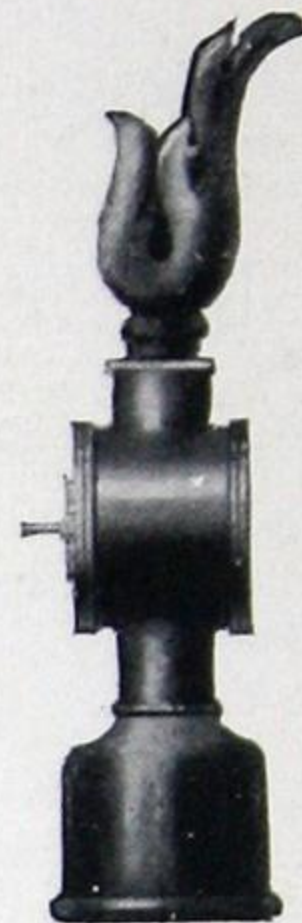
No. 34.

INSULATED
SUSPENDER.

Bushed Inlet Holes.

$\frac{1}{2}$ " Gas Tapping.

3/- each



No. 39.*

COMBINED SPIGOT
CAP AND D.P. SWITCH
FUSE.

With Tulip Ornament.



No. 33.

WEATHERPROOF
SUSPENDER.

$\frac{1}{2}$ " Gas Tapping.

$\frac{1}{6}$ each.



No. 32.

BUSHED SUSPENSION
HOOK.

$\frac{1}{2}$ " Gas Tapping or

$\frac{1}{2}$ " Gas Screwed.

$\frac{1}{3}$ each



No. 31.

SUSPENSION EYE.

$\frac{1}{2}$ " Gas Tapping.

$\frac{1}{3}$ each.



No. 100.

CAST IRON
BACK PLATE.

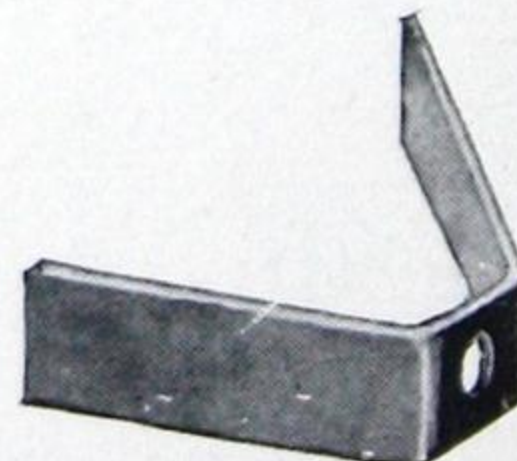
3" 4" or 6" diameter.
 $\frac{1}{3}$, $\frac{1}{6}$, 2/- each.



No. 30.

BRASS
CEILING PLATE.

$\frac{1}{6}$ each.



No. 110.

WROUGHT IRON
ANGLE PLATE.

$\frac{4}{6}$ each.



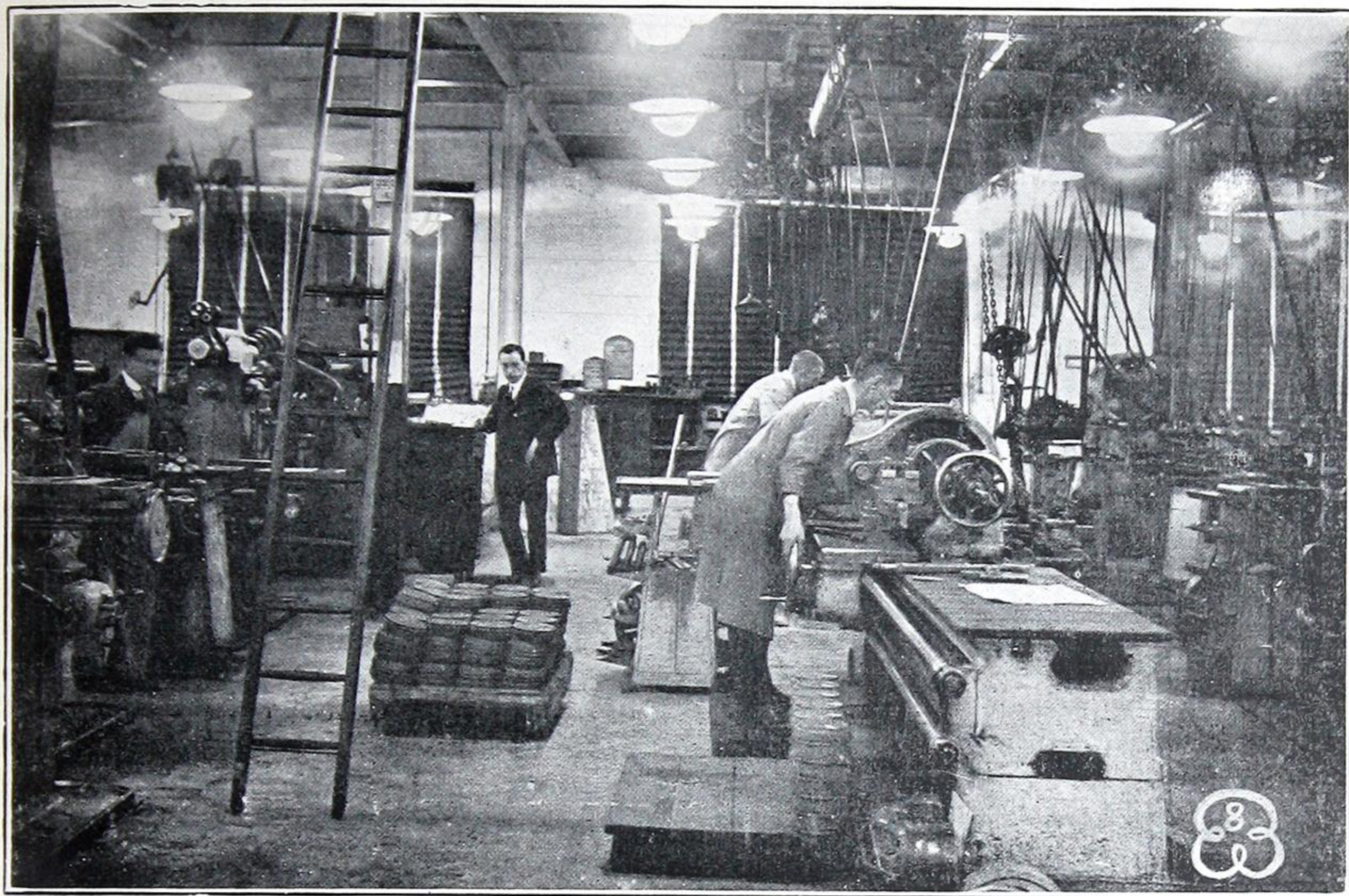
No. 105.

FISH-TAIL
BACK PLATE.

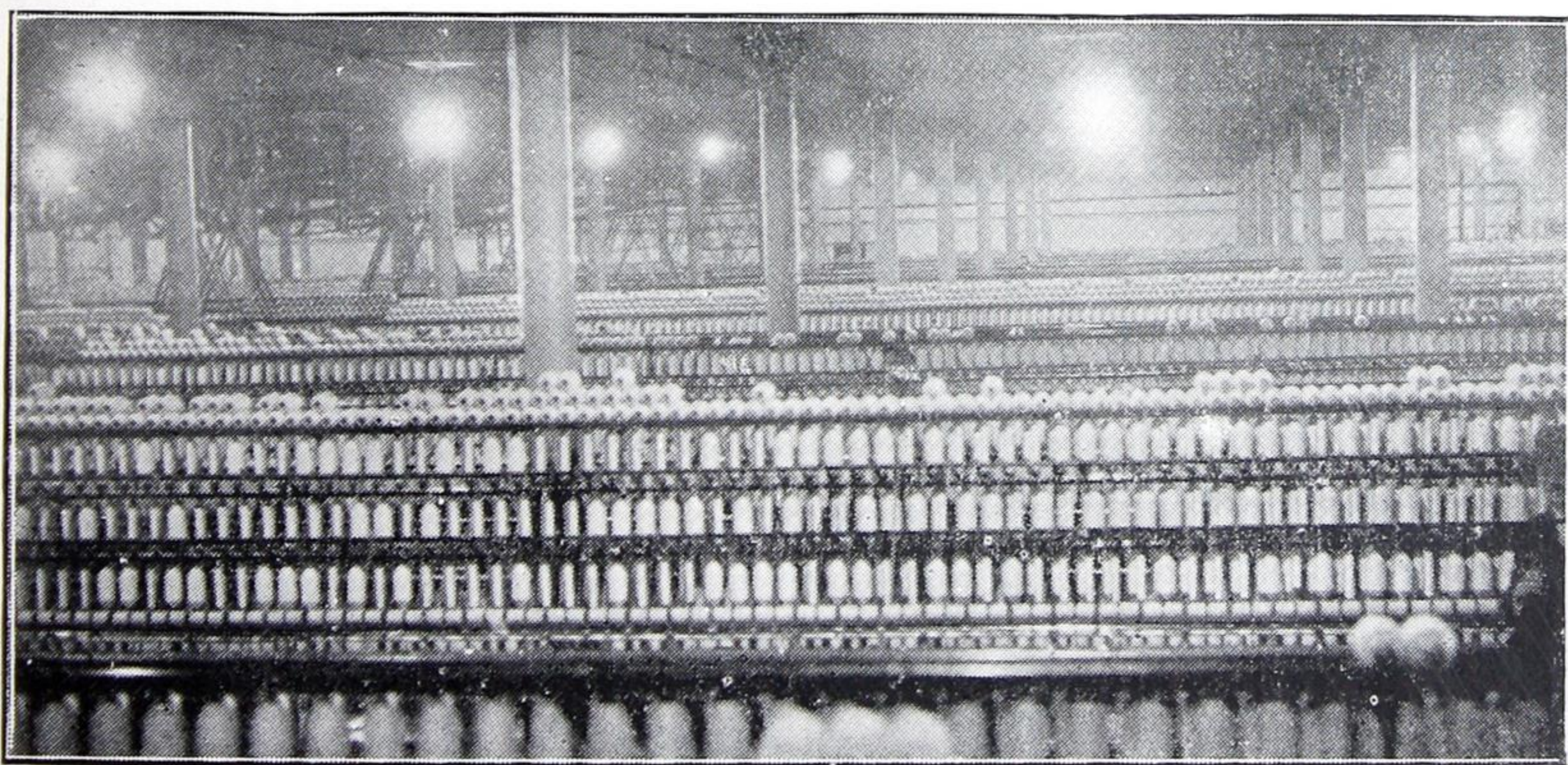
4/- each.

* PRICES ON APPLICATION. STATE DIAMETER OF SPIGOT.

Wardle Fittings.

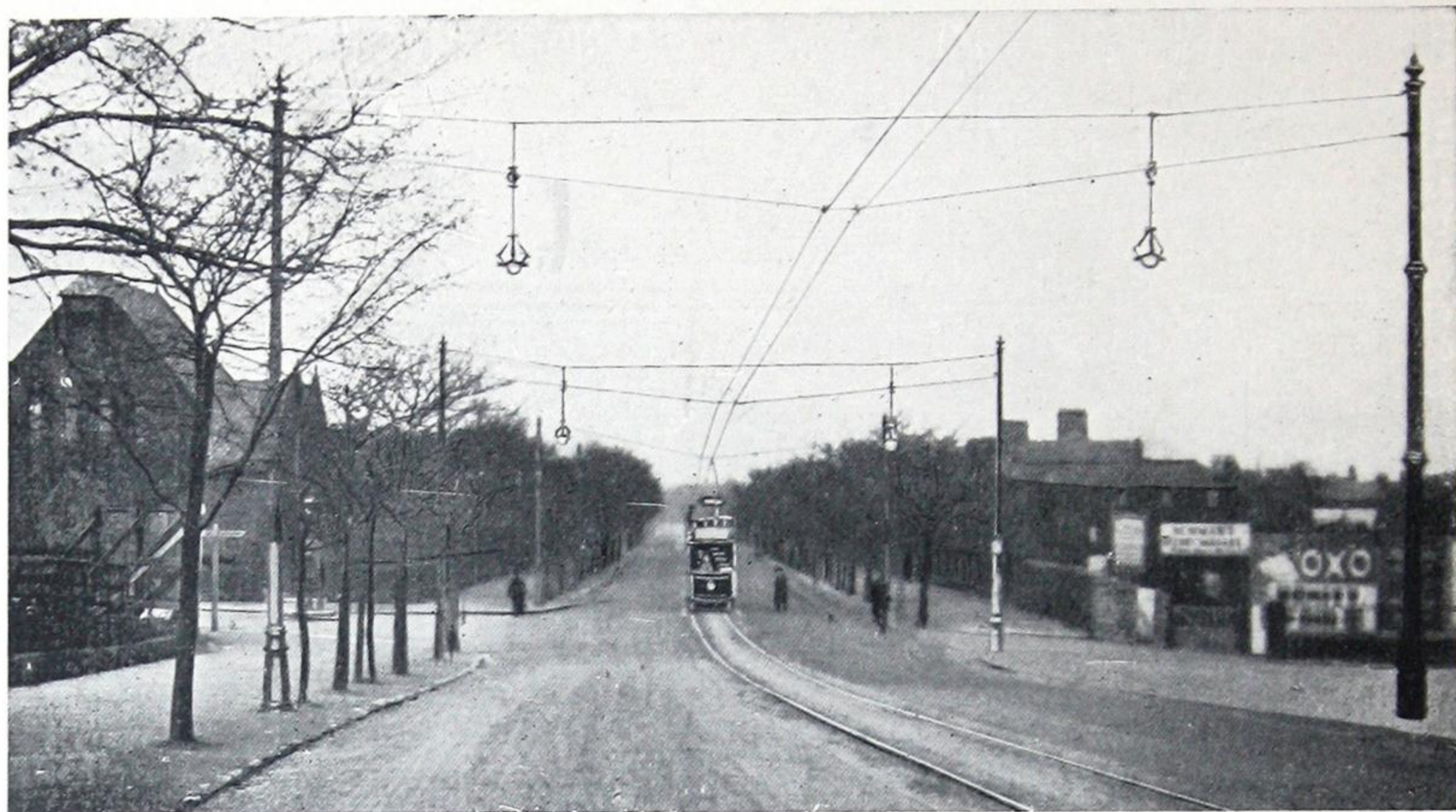


WARDLE "INVERLITE" FITTINGS IN A TOOL ROOM.



WARDLE "WORKSLITE" FITTINGS IN A MULE SPINNING ROOM.

Wardle Fittings.



WARDLE "BARROW" SUSPENSION FITTINGS NEAR LONDON.



WARDLE "PRIMUS" LANTERNS IN MARKET STREET, MANCHESTER.

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